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DISCOURSE ANALYSIS OF A MAZATEC TEXT

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0. Techniques for the analysis of connected discourse have been elaborated by Zellig Harris in two articles published in volume 28 of Language, namely, "Discourse Analysis,"[1] and "Discourse Analysis: A Sample Text."[2] These techniques are here applied to a text in Mazatec, an Indian language of Southern Mexico. It is specifically not the purpose of this paper to argue either the validity of the techniques used, or their universal applicability, but simply to note whatever insights into the structure of this particular text may be obtained by their use.

Two techniques are used in the analysis. First, the basic technique of discourse analysis, which consists of assigning the words or phrases of the text to equivalence classes on the basis of occurrence in identical or equivalent environments;[3] and second, the use of the transformational rules of Mazatec to render parts of the text more easily analyzable.[4]

1. The text consists of a description of an illness caused by food witchcraft, and its cure. It was narrated by two alternate speakers: Zenaida, a young girl, begins the narrative; it is taken up by her father, and then completed by Zenaida.[5]

Zenaida starts the story: 1. čhao^{42}-na^{1} ki^{3}skia^{24}-le^{4}. *egg-emphasis bewitched-her.* 2. hao^{2} k?a^{3} thį^{1}-ni^{3} nka^{3} ki^{3}skia^{24}-le^{4}. *two times is-present which bewitched-her.* 3. koi^{3}. . . . hme^{1}-sa^{3}ni^{3} ntai^{4}, *uh..uh..what-more-now,* ka^{2}ta^{3}co^{2}ya^{3}-li^{2} ?ę^{13} ši^{3} s?a^{4} ha^{3}?ai^{3}, *let-him-teach-to-you words who just arrived* he^{23} ši^{3} nki^{2}sa^{4} nta^{3} thį^{1}hį^{42}-le^{4}. *he who more good is-remembered-by-him.*

The father continues the story: 4. *koi*^{3}. . . *uh. .uh.* .ki^{3}čhi^{42}-ni^{1} ya^{1}sį^{3}, *discharged-emphasis neck,* ho^{3}nka^{3} ki^{3}s?e^{43}. *how became.* (demonstrating with his hand the size.) 5. ?i^{4}s?į^{2} va^{1}hna^{3}. *here-thus it-lay.* (demonstrating how she held her head.) 6. ne^{42}, *look,* he^{23} ši^{3} to^{3}hce^{1}?a^{3}me^{3}ri^{3}ka^{2}no^{4} co^{2}-le^{4} čo^{4}ta^{4} ?i^{4}vi^{4}. *that which sore-American say-it people here.* 7. sa^{1}ho^{2}lio^{4}, ką^{43}?ąǫ^{2} ho^{2}lio^{4} nka^{3} ti^{1}m?ę^{43} *month-July, twenty-five-July that is-sick.* 8. ni^{4}nki^{3} ti^{4}ca^{3}khę^{3}. *not-more now-ate.* 9. me^{3}k?ę^{43}. *almost died.* 10. ki^{3}?nta^{1} v?a^{3}ni^{4}čhį^{4}.

[1] Lg. 28.1-30 (1952).
[2] Lg. 28.474-494 (1952).
[3] See Harris p. 29–30.
[4] See Harris pp. .9–20.

[5] The text was recorded by Eunice V. Pike and is used with her permission. A part of it, with an explanation of its ethnological significance appeared in: Eunice Victoria Pike, Texts on Mazatec Food Witchcraft, El México Antiguo, 7.287-294 (1949).

The phonemes of Mazatec (Huautla dialect) are: stops t, k; affricates c, č, ę; nasals m, n, ñ; fricatives s, š, v; glide y; flap r; lateral l; laryngeals h, ?; vowels i, e, a, o (both oral and nazalized); tones high ^{1}, semi-high ^{2}, semi-low ^{3}, and low ^{4}; and p, b, d, g, and ř which occur only in Spanish loans.

Enclitics are separated from the stem by hyphen. Stress occurs on syllables immediately preceding hyphen or space.

For a fuller description of the phonemes, see Kenneth L. Pike and Eunice V. Pike, Immediate Constituents of Mazateco Syllables, IJAL 13.78-91 (1947).

cried all-day. 11. mpa^{4} *hmph*! hnko^{3} sa^{13}-la^{4} ki^{3}s?e^{43} nka^{3} k?oa^{4}s?į^{2} ki^{3}ski^{3}?nta^{1}kao^{4}. *one month-probably became that thus cried-with*. 12. ne^{43} *look*, nkhį^{1} co^{3}hmi^{23} ši^{3} ki^{3}s?e^{43}t?a^{43}. *many things which were-put-on*. 13. čhao^{42} ki^{3}s?e^{43}t?a^{43}. *egg was-put-on*. 14. nka^{3}yi^{3}he^{24} to^{4}ho^{3} khǫą^{3} ši^{3} thį^{1}, *everything just-how it-looks that there-is*, nča^{2}są^{24} ši^{3} ki^{3}s?e^{43}t?a^{43}. *sour-corn-gruel that was-put-on*. 15. ha^{4}. .koi^{3} . . .*hah*!. . . .*uh* to^{4}me^{3}to^{4}k?oa^{4} thį^{1} *just-thus is-present* ši^{3} thį^{1}hį^{43}-na^{3}. *which is-remembered-to-me*.

Zenaida continues: 16. čhao^{42} s?e^{43}sǫ^{2}. *egg was-put-on*. 17. ki^{3}s?e^{43}t?a^{43}, *was-put-on*. 18. ki^{3}s?e^{43}t?a^{43} ?i^{4}ya^{1}sį^{3}-vi^{4}. *was-put-on her-neck-here*. 19. na^{4}hno^{4} ki^{3}s?e^{43}hte^{1}nki^{3} ya^{1}sį^{3}. *tobacco was-wrapped-around neck*. 20. ki^{3}ni^{2}-čhą^{1}-le^{4} ya^{1}sį^{3} kao^{4} čao^{34}. *was-cooked her-neck with ashes*. 21. čhoa^{4}she^{23} ca^{3}k?e^{1}-lai^{4}hį^{4} *poultice we massaged it*. 22. k?ia^{4} kǫą^{3}nta^{3}-ni^{3}. *then got-well*. 23. čhoa^{4}she^{23} ?mi^{2} ši^{3} čao^{3}she^{23} s?e^{43}hte^{1} na^{4}hno^{4}. *poultice is-called which hot-ashes is-wrapped-in tobacco*. 24. li^{2}koi^{3} kǫą^{3}?a^{3}-le^{4} pa^{23}-na^{4}, *not was-unoccupied-to-him father-my* nka^{3} ca^{3}k?e^{1}nta^{3} nto^{4}ya^{13} ca^{2}kai^{3}-ni^{3}. *that built sweat-bath but-not*. 25. hnko^{3} na^{4}hno^{4} škǫę^{13} ši s?e^{43}ne^{3}-le^{4} *one tobacco fresh which was-put-on-it* hme^{1}-ni^{3} ma^{3}nta^{3}. *in-order-that get-well*. 26. ki^{3}ši^{2} hce^{13}-le^{4}?ni^{3}. *dried sore-her-emphasis*. 27. to^{4}ña^{3}ki^{3} ntia^{32} s?e^{43}hna^{3} škę^{1}-ve^{4}. *absolute forever would-remain crippled*. 28. a^{3}li^{2}koi^{3} ma^{3}nta^{3}. *not get-well*. 29. ca^{2} ci^{2}koi^{3} sa^{3}te^{1}-le^{4} nto^{4}ya^{13}, *if not is-covered-it sweat-bath*, li^{2}koi^{3} ma^{3}nta^{3} hce^{13}-le^{4}. *not get-well sore-her*.

The free translation of this text is as follows:

Zenaida starts the story: 1. An egg bewitched her. 2. Twice it bewitched her. 3. uh. .what more now—let the one who just arrived teach you: he remembers better.

Father continues the story: 4. uh. .her neck discharged; it became very big. 5. It lay like this. 6. Look, that kind of sore is what the people here call an American ulcer. 7. It was in July, the twenty-fifth of July that she got sick. 8. She no longer ate. 9. She almost died. 10. She cried all day. 11. Hmph! It was probably a whole month that she cried with it like that. 12. Look! We put many things on it. 13. We put on egg. 14. We put on all kinds of things—sour atole. 15. hah! That is all I remember.

Zenaida continues: 16. Egg was put on it; 17. was put on it; 18. was put on her neck here. 19. We wrapped tobacco around her neck. 20. We heated her neck with ashes. 21. We put on a special poultice. 22. Then it got well. 23. Special poultice is what we call a poultice of hot ashes wrapped in tobacco. 24. My father was too busy to build a sweat bath. 25. Fresh tobacco was put on in order to heal it. 26. Her ulcer dried up. 27. It would have remained crippled forever. 28. and never gotten well. 29. If it had not been cured in the sweat bath her sore never would have gotten well.

2.1. The analysis of the text is presented here sentence by sentence. It should be understood, however, that the process of analysis involved a series of approximations. A summary of class membership may be seen in **2.2**; the array of class occurrence in the entire text is seen in **2.3**.

Sentence 1 consists of two words, čhao^{42}-na^{1} *egg-emphasis* and ki^{3}skia^{24}-le^{4} *bewitched-her*. The fact that čhao^{42} *egg* is repeated in Sentences 13 and 16, and that ki^{3}skia^{24}-le^{4} *bewitched her* is repeated in Sentence 2 suggests that each of these parts may be relevant to the analysis, so they are assigned to two separate classes: čhao^{42}-na^{1} to Class A, and ki^{3}skia^{24}-le^{4} to Class B. It should be noted that a more detailed analysis might have been made by putting -na^{1} *emphatic* or -le^{4} *third person object* into separate classes. This was not done, on the assumption that the most useful analysis will deal with major classes or head words rather than the minor non-repeated words, which are therefore included with the head.

Sentence 2—hao^{2} k?a^{3} thį^{1}-ni^{3} nka^{3} ki^{3}-skia^{24}-le^{4} *there are two times that she was bewitched*—contains a repetition of ki^{3}skia^{24}-le^{4} *it bewitched her*, but hao^{2} k?a^{3} thį^{1}-ni^{3} nka^{3}

there are two times that is not at all grammatically equivalent to čhao^{42} *egg* and cannot be put into the same class. The transformational grammar of Mazatec offers a way out of the difficulty. hao^{2} k?a^{3} thį^{1}-ni^{3} *there are two times* is a transform of the temporal phrase nka^{3} hao^{2} k?a^{3} *twice*;[6] nka^{3} ki^{3}-skia^{2}-le^{4} *that bewitched her* is a transform of ki^{3}skia^{24}-le^{4} *it bewitched her*. Applying these transformations results in a sentence nka^{3} hao^{2} k?a^{3} ki^{3}skia^{24}-le^{4} (*it*) *bewitched her twice*. This sentence in turn contains a zero occurrence of čhao^{42} *egg*, and can be filled out to read chao^{42}, hao^{2} k?a^{3} ki^{3}skia^{24}-le^{4} *twice the egg bewitched her*.[7] In this form, the sentence includes a repetition of čhao^{42} *egg* which is Class A, and a repetition of ki^{3}skia^{24}-le^{4} *it bewitched her* plus a modifying phrase hao^{2} k?a^{3} *twice* which is nowhere repeated in the text; the verb and its modifying phrase together are therefore assigned to Class B. Sentence 2 turns out to be a repetition of AB.

Sentence 3 begins with a stutter form—koi^{3} . . . hme^{1}-sa^{3}ni^{3} ntai^{4} *uh . . . what more now*—which is not grammatically related to other parts of the text, nor repeated in the text. This stretch is assigned to a new Class T. Sentence 3 continues: ka^{2}ta^{3}co^{2}ya^{3}-li^{2} ?ę^{13} ši^{3} s?a^{4} ha^{3}?ai^{3}, he^{23} ši^{3} nki^{2}sa^{4} nta^{3} thį^{1}hį^{43}-le^{4} *let him who just arrived teach you, he who remembers better*. There is here no repetition from Sentences 1 or 2; new classes must be set up. As it stands, the sentence consists of a main clause—ka^{2}ta^{3}co^{2}ya^{3}-li^{2} ?ę^{13} *let teach you language*, with two clauses in opposition serving as subject—ši^{3} s?a^{4} ha^{3}?ai^{3}, *who just arrived* he^{23} ši^{3} nki^{2}sa^{4} nta^{3} thį^{1}hį^{43}-le^{4} *he who remembers better*. Since thį^{1}hį^{43}- *remember* is repeated in Sentence 15, it is desirable that thį^{1}hį^{43}- occur in the main clause in this sentence. This is possible because each subordinate clause is a transform of a main clause and vice versa.[8] The transformed sentence may read: nki^{2}sa^{4} nta^{3} thį^{1}-hį^{43}-le^{4} ?ę^{13} he^{23} ši^{3} s?a^{4} ha^{3}?ai^{3} he^{23} ši^{3} ka^{2}ta^{3}-co^{2}ya^{3}-li^{2} *he who just arrived, who should teach you remembers language better*. In the transformed sentence, *he who just arrived* and *he who should teach you* are clauses in apposition serving as object of thį^{1}hį^{43}-le^{4} ?ę^{13} *he remembers language* (literally *language exists inside with reference to him*). thį^{1}hį^{43}-le^{4} along with its non-repeated modifying phrase nki^{2}sa^{4} nta^{3} *better* is assigned to Class C; ?ę^{13} *language* is assigned to Class E; he^{23} ši^{3} s?a^{4} ha^{3}?ai^{3} and he^{23} ši^{3} ka^{2}ta^{3}co^{2}ya^{3}-li^{2} ?ę^{13} are each assigned to Class D. These classes are again seen in Sentences 15 and 24.

Sentence 4 begins with a stutter form—koi^{3} . . *uh* . .—which is a partical repetition of the stutter form in Sentence 3. This is assigned to Class T. The sentence continues: ki^{3}čhi^{43}-na^{1} ya^{1}sį^{3}; ho^{3}nka^{3} ki^{3}s?e^{43} *her neck discharged-emphasis; it became like this*. ho^{3}nka^{3} ki^{3}s?e^{43} may be filled out to ho^{3}nka^{3} ki^{3}s?e^{43} ya^{1}sį^{3} substituting ya^{1}sį^{3} *her neck* for its zero occurrence in the second clause. Since nothing in this sentence is a repetition of material already assigned to classes, ya^{1}sį^{3} *her neck* is assigned to a new Class S. Then ki^{3}čhi^{43}-na^{1} *it discharged-emphasis* and ho^{3}nka^{3} ki^{3}s?e^{43} *thus it became* are both members of another class by virtue of occurrence with ya^{1}sį^{3}. This class is labeled R.

Sentence 5—?i^{4}s?į^{2} va^{1}hna^{3} *thus it lay*—may be expanded to ?i^{4}s?į^{2} va^{1}hna^{3} ya^{1}sį^{3} *thus her neck lay* by substituting ya^{1}sį^{3} for its zero occurrence. ya^{1}sį^{3} is clearly Class S, so ?i^{4}s?į^{2} va^{1}hna^{3} is assigned to Class R.

Sentence 6 begins with an exclamation—ne^{43} *look*—which is grammatically unrelated to the rest of the text, and which is assigned to a new Class X. The rest of the sentence, with ni^{1} *is* substituted for its zero occurrence, is he^{23} ni^{1} ši^{3} to^{3}hce^{1}?a^{3}me^{3}ri^{3}ka^{2}no^{4} co^{2}-le^{4} čo^{4}ta^{4} ?i^{4}vi$^{?}$ *this is what the people here call an 'American sore'*. Nothing in this sentence repeats other parts of the text; its gram-

[6] This is a special transformation not included in my A Sketch of Mazatec Kernel Constructions and Transformations: T V N ↔ T thį^{1}-ni^{3} kna^{3} N. Note that T V N is a transform of T + V N with a change in order; and that this particular T, hao^{3}k?a^{3} *twice* is a transform of Q R N hao^{3} ma^{3}ni^{3} k?a^{3} *there are two times* (Q R N ↔ Q N).

[7] Ibid. **3.2.1.**

[8] Ibid. **3.3.1.**

matical form (Noun plus Relational verb plus Noun) is repeated only in Sentence 23. Both these sentences are put into a special Class Q.

Sentences 7–11 constitute a series of verbs, each of which has as subject a zero occurrence of Eva—the name of the sick girl—supplied from the matrix of the text rather than the text itself. Each of these verbs with its nonrepeated modifying clause is assigned to Class K. Sentence 7 consists of a temporal phrase sa^{1}ho^{2}lio^{4}, kạ^{43}ʔạǫ^{2} ho^{2}lio^{4} *July, July 25* and the verb ti^{1}mʔẹ^{43} *she was sick*. Sentence 8 consists of a temporal phrase ni^{4}nki^{3} *not-more* and the verb ti^{4}ca^{3}khẹ^{2} *she ate*. Sentence 9 consists of the verb alone: me^{3}kʔẹ^{43} *she almost died*. Sentence 10 consists of the verb ki^{3}ʔnta^{1} *cried* followed by a temporal expression vʔa^{3}ni^{4}čhị^{4} *all day*. Sentence 11 begins with an exclamation mpa^{4} *hmph* which is assigned to Class X. Sentence 11 has both a temporal phrase hnko^{3} sa^{13}-la^{4} ki^{3}sʔe^{43} *one month probably* and an adverb modifier kʔoa^{4}sʔị^{2} *thus* plus the verb ki^{3}skiʔ^{3}ʔnta^{1}kao^{4} *she cried with it*; this is assigned to Class K.

Sentence 12 is a transform of two kernel sentences: nkhị^{2} ma^{3}ni^{3} co^{3}hmi^{23} *there are many things*; co^{3}hmi^{23} ki^{3}sʔe^{43}tʔa^{43} *things were put on*. These may be further transformed to a single sentence nkhị^{2} co^{3}hmi^{23} ki^{3}sʔe^{43}tʔa^{43} many things were put on.[9] The noun with its modifier—nkhị^{2} co^{3}hmi^{23} *many things*—is assigned to Class Y and the predicate ki^{3}sʔe^{43}-tʔa^{43} is assigned to Class W.

In Sentence 13, the verb ki^{3}sʔe^{43}tʔa^{44}, again assigned to Class W, is repeated with a new object, čhao^{42} meaning *egg*. Since the word čhao^{42} *egg* and the phrase nkhị^{2} co^{3}hmi^{23} *many things* occur in identical environment, preceding the verb ki^{3}sʔe^{43}tʔa^{43}, čhao^{42} is assigned to Class Y along with nkhị^{2} co^{3}hmi^{2}. In Sentence 14 there is another repetition of the same verb ki^{3}sʔe^{43}tʔa^{43}, again assigned to Class W, nča^{2}sạ^{34} *sour-corn-gruel* is assigned to Class Y by virtue of its occurrence in identical environment with the other members of Class Y. But this leaves an unanalyzed remnant, the phrase nka^{3}yi^{3}he^{34} tǫ^{4}ho^{3} khǫạ^{3} ši^{2} thị^{1} *everything that there is*. Here a transformational rule is needed. In Mazatec the construction of noun phrases, pause, noun phrase, plus verb, in which the two nouns are in appositional relation to each other, is a transform of, or equivalent to, a fuller construction in which each of the nouns appears in turn with the verb as a full sentence.[10] So Sentence 14, which has two noun phrases in appositional relationship, may be filled out to read nka^{3}yi^{3}he^{34} to^{4}ho^{3} khǫạ^{3} ši^{3} thị^{1} ki^{3}-sʔe^{43}tʔa^{43}, *everything was put on*; and nča^{2}sạ^{34} ki^{3}sʔe^{43}tʔa^{43} *sour gruel was put on*. In this expanded form, the phrase *everything* occurs in an environment identical with the environments of the other members of Class Y, and it is therefore assigned to Class Y.

Sentence 15 begins with an exclamation ha^{4} *hah*! which is assigned to Class X, followed by a stutter koi^{3}. . .which is assigned to Class T. The rest of the sentence—to^{4}me^{4}-to^{4} kʔoa^{4} thị^{1} ši^{3} thị^{1}hị^{43}-na^{3} *that's almost all that I remember* is a transform of two sentences: to^{4}me^{3}to^{4} kʔoa^{4} thị^{1} *that's almost all*; thị^{1}hị^{43}-na^{3} *I remember*. Still a further transformation permits the combination of these two sentences as ši to^{4}me^{3}to^{4} kʔoa^{4} thị^{1} thị^{1}hị^{43}-na^{3} *I remember what is just thus*.[11] thị^{1}hị^{43}-na is now assigned to Class C along with thị^{1}hị^{43}-le^{4} of Sentence 3. (-na^{3} *I* refers to the speaker who is also the Father; -le^{4} *he* in Sentence 3, also referred to the Fäther, so -na^{3} and -le^{4} are equivalent.) ši^{3} to^{4}me^{3}to^{4} kʔoa^{4} thị^{1} *what is just thus* is assigned to Class E by virtue of its occurrence with a Class C verb.

In Sentence 16 a new verb sʔe^{43}sǫ^{2} meaning *was-put-on* is assigned to Class W on the basis of its occurrence following the object čhao^{42} *egg* which constitutes an environment identical with that of the verb ki^{3}sʔe^{43}tʔa^{43}. ki^{3}sʔe^{43}tʔa^{43} of Sentence 17 is another repetition of Class W as in Sentences 12, 13, and 14.

In Sentence 18 there is a repetition of the

[9] Ibid. **3.3.1.**

[10] Ibid. **3.2.1.**

[11] Ibid. **3.3.1.**

Class W verb ki³s?e⁴³t?a⁴³ with a new element, ?i⁴ya¹sį³-vi⁴ *neck here*. At this point it should be noted that the ?i⁴. . .vi⁴ which occurs here with ya¹sį³ is a modifying complex meaning roughly *here*. Since it is not repeated in the text, it is included with its head ya¹sį³, so that the item ?i⁴ya¹-sį³-vi⁴ of Sentence 18 is considered to be the same as ya¹sį³ in Sentence 19.

Unlike the elements previously assigned to Class Y, ya¹sį³ follows rather than precedes the Class W word. In addition, ya¹sį³ is an example of O³ of the six possible Mazatec objects, whereas the members of Class Y have all been examples of O².[12] Therefore, rather than assigning ya¹sį³ to Class Y, we tentatively label it as a member of a new Class Z.

In Sentence 19 the new verb ki³s?e⁴³hte¹nki³ *was wrapped around* is assigned to Class W because of its occurrence preceding ya¹sį³ *neck*, a member of the new Class Z. Now na⁴hno⁴, *tobacco* can be assigned to Class Y by its occurrence as O² of a Class W verb. At this point we see justification for the setting up of a new Class Z in that in Sentence 19 both Y and Z occur in the same sentence.

The assignment of na⁴hno⁴ to Class Y is an illustration of the chains of equivalences used in this analysis. na⁴hno⁴ does not occur in any environments which are identical with the environments in which the other members of Class Y occur. But since ki³s?e⁴³t?a⁴³ (in Sentence 18) and ki³s?e⁴³hte¹nki³ (in Sentence 19) are equivalent by occurrence in the same environment, namely with ya¹sį³, they constitute equivalent environments and as such define na⁴hno⁴ which occurs as O² with ki³-s?e⁴³hte¹nki³ as a member of the same class as the words which occur as O² with ki³s?e⁴³-t?a⁴³. Throughout this paper, such a chain is implied each time that it is stated that an element is assigned to a certain class because of its occurrence with a member of another class.

Sentence 20 has some new elements which cannot be analysed by the techniques of Discourse Analysis until certain transformations have been applied: In Mazatec, Verb plus Preposition plus Noun is a transform of Verb with directional as last main stem plus Noun as object.[13] When this transform is applied to Sentence 20, we get ki³ni²čhą¹kao⁴-le⁴ čao³⁴ ya¹sį³ *was-cooked-with-ashes neck*, in which the preposition kao⁴ *with* is now a part of the verb stem, and čao⁴ *ashes* is an object of the verb. A further transform is now needed to put the resultant sentence into a form comparable to the sentences already analyzed as sequences of the Classes YWZ. In Mazatec a sequence VNN is a transform of NVN, in that any noun, either subject or object, may optionally either precede the verb or follow it.[14] By applying this transformation to the sequence ki³ni²čhą¹kao⁴-le⁴ čao³⁴ ya¹sį³, we get čao³⁴ ki³ni² čhą¹kao⁴-le⁴ ya¹sį³. Now the ya¹sį³ *neck* is clearly a member of Class Z, which permits us to assign ki³ni²čhą¹kao⁴-le⁴ to Class W and čao³⁴ in turn to Class Y.

Sentence 21 may be filled out to čhoa⁴she²³ ca³k?e¹-lai⁴hį⁴ ya¹sį³ *we massaged her neck with a poultice* by substituting ya¹sį³ for its zero occurrence. ya¹sį³ is Class Z; this permits the assignment of čhoa⁴she²³ to Class Y and ca³k?e¹-lai⁴hį⁴ to Class W.

The whole of Sentence 22 k?ia⁴ kǫą³nta³-?ni³ *then it got well*, consisting of a temporal modifier plus a verb, is assigned to a new Class O. Further members of this class are found in Sentences 25, 26, 28, and 29.

Sentence 23, like Sentence 6, differs from the rest of the text in having the form noun-relator verb-noun. Like Sentence 6, it is assigned as a whole to Class Q—even though its object ši³ čao³she²³ s?e⁴³hte¹ na⁴hno⁴ *hot ashes wrapped in tobacco* contains elements which occur elsewhere; these elements cannot in this context be analyzed into the same classes as previous occurrences.

Sentence 24 consists of two clauses: li²koi³ kǫą³?a³-le⁴ pa²³-na⁴ *my father was not unoccupied*, and ca³k?e¹nta³ nto⁴ya¹³ ca²kai³-ni³ *he might have built a sweat bath* loosely connected by a conjunction nka³ *that*. In the

[12] Ibid. **3.1.2.**

[13] Ibid. **3.1.1.4.**

[14] Ibid. **3.1.2.**

first clause, pa^{23}-na^{4} *my father* is equivalent, in terms of the physical matrix, to he^{2} ši^{3} s?a^{4} ha^{3}?ai^{3} *he who just came* and he^{2} ši^{3} ka^{2}ta^{3}co^{2}ya^{3}-li^{2} *he who should teach you* of Sentence 3; it is accordingly assigned to Class D. This permits the assignment of kǫą^{3}?a^{3}-le^{4} *he was unoccupied* to Class C. li^{2}koi^{3} *not* is assigned to Class N, a class of negatives. The analysis of the second clause is dependent on the analysis of the first clause of Sentence 29, which may be filled out to ca^{2} ci^{2}koi^{3} sa^{3}te^{1}-le^{4} nto^{4}ya^{13} ya^{1}sį^{3} *if the neck were not covered by a sweat bath* by the substitution of ya^{1}sį^{3} for its zero occurrence. ca^{2} ci^{2}koi^{3} *if not* is a negative, and is assigned to Class N. sa^{3}te^{1}-le^{4} is assigned to Class W and nto^{4}ya^{13} to Class Y because of their occurrence with ya^{1}sį^{3}.

Having established nto^{4}ya^{13} as a member of Class Y in Sentence 29, the hnko^{3} nto^{4}ya^{13} of Sentence 24 can likewise be assigned to Class Y. This in turn permits the assignment of ca^{3}k?e^{1}nta^{3} to Class W.

In Sentence 25, na^{4}hno^{4} *tobacco* is assigned to Class Y and is na^{4}hno^{4} in Sentence 19. The modifying elements hnko^{3} *one* and škǫę^{1} *fresh* are included with the head word na^{4}hno^{4} to form a single member of Class Y. s?e^{43}ne^{2}-le^{4} is assigned to Class W on the basis of its occurrence with Class Y element. hme^{1}ni^{3} *in order that* is a conjunction indicated in the array of Section **2.3** by +. ma^{3}nta^{3} is a repetition—differing only by tense—of the kǫą^{3}nta^{3} of Sentence 22, and is therefore assigned to Class O, as are the repetitions of ma^{3}nta^{3} in Sentences 28 and 29. hce^{13}-le^{4} *her sore* in Sentence 29 is assigned to a new class P. Then hce^{13}-le^{4}?ni^{3} *her sore-emphasis* in Sentence 26 is also a member of Class P, and ki^{3}ši^{2} *it dried* which occurs with it is assigned to Class O. The negatives ?a^{3}li^{2}koi^{3} and li^{2}koi^{3} in Sentences 28 and 29 are assigned to Class N.

Sentence 27, can be filled out to read to^{4}-ña^{3}ki^{3} ntia^{32} s?e^{1}hna^{3} škę^{1}-ve^{4} ya^{1}sį^{3} *absolutely forever her neck would remain crippled* by substituting ya^{1}sį^{3} for its zero occurrence. Then ya^{1}sį^{3} belongs to Class S, and to^{4}ña^{3}ki^{3} ntia^{32} s?e^{4}hna^{3} škę^{1}-ve^{4} can be assigned to Class R.

2.2. The membership of the various classes may now be summarized. Numbers in this summary refer to sentences in the text from which the class members have been abstracted.

A: (1) čhao^{42}-na^{1} *egg-emphasis*; (2) (čhao^{42} *egg*).

B: (1) ki^{3}skia^{24}-le^{4} *it bewitched her*; (2) nka^{3} hao^{2} k?a^{3} ki^{3}skia^{24}-le^{4} *twice it bewitched her*.

T: (3) koi^{3}. . . .hme^{1}-sa^{3}ni^{3} ntai^{4} *uh. . . . what more now*; (4) koi^{2}. . . . *uh* . . . , (15) koi^{3}. . . *uh* . . . .

C: (3) thį^{1}hį^{43}-le^{4} *he remembers*; (15) thį^{1}-hį^{43}-na^{3} *I remember*; (24) kǫą^{3}?a^{3}-le^{4} *he was unoccupied*.

D: (3) he^{23} ši^{3} s?a^{4} ha^{3}?ai^{3} *he who just came*; (3) he^{23} ši^{3} ka^{2}ta^{3}co^{2}ya^{3}-li^{2} *he who should teach you*; (24) pa^{23}-na^{4} *my father*.

E: (3) ?ę^{13} *language*; (15) to^{4}me^{3}to^{4} k?oa^{4} thį^{1} *that's all*.

S: (4) ya^{1}sį^{3} *her neck*; (4) (ya^{1}sį^{3} *her neck*); (5) (ya^{1}sį^{3} *her neck*); (27) (ya^{1}sį^{3} *her neck*).

R: (4) ki^{3}čhį^{43}-na^{1} *it discharged-emphasis*; (4) ho^{3}nka^{3} ki^{3}s?e^{43} *thus it became*; (5) ?i^{4}s?į^{2} va^{1}hna^{3} *thus it lay*; (27) to^{4}ña^{3}ki^{3} ntia^{32} s?e^{43}hna^{3} škę^{1}-ve^{4} *it would absolutely forever remain crippled*.

X: (6) ne^{43} *look*; (11) mpa^{4} *hmph*!; (15) ha^{4} *hah*!

Q: (6) he^{23} ni^{1} ši^{3} to^{3}hce^{1}?a^{4}me^{3}ri^{3}ka^{2}no^{4} co^{2}-le^{4} čo^{4}ta^{4} ?i^{4}vi^{4} *This is what people here call an 'American sore'*. (23) čhoa^{4}she^{23} ?mi^{2} ši^{3} čoa^{3}she^{23} s?e^{43}hte^{1} na^{4}hno^{4} *hot ashes wrapped in tobacco is called 'hot poultice'*.

K: (7) sa^{1}ho^{2}lio^{4}, kǫ^{43}?ąǫ^{2} ho^{2}lio^{4} ti^{1}m?e^{43} *July, July 25 she got sick*; (8) ni^{4}nki^{3} ti^{4}ca^{3}-khę^{2} *she didn't eat any more*; (9) me^{3}k?ę^{43} *she almost died*; (10) ki^{3}?nta^{1} v?a^{3}ni^{4}čhį^{4} *she cried all day*; (11) hnko^{3} sa^{13}-la^{4} ki^{3}s?e^{43} nka^{3} k?oa^{4}s?į^{2} ki^{3}ski^{3}?nta^{1}kao^{4} *probablya month she thus cried with it*.

W: (12) ki^{3}s?e^{43}t?a^{43} *were put on*; (13) ki^{3}s?e^{43}t?a^{43} *were put on*; (14) (ki^{3}s?e^{43}t?a^{43} *was put on*); (14) ki^{3}s?e^{43}t?a^{43} *was put on*; (16) s?e^{43}sǫ^{2} *was put on*; (17) ki^{3}s?e^{43}t?a^{43} *was put on*; (18) ki^{3}s?e^{43}t?a^{43} *was put on*; (19) ki^{3}s?e^{43}hte^{1}nki^{3} *was wrapped under*; (20) ki^{3}-ni^{2}čhą^{1}kao^{4}-le^{4} *was cooked with*; (21) ca^{3}k?e^{1}-lai^{4}hį^{4} *we massaged with*; (24) ca^{3}k?e^{1}mta^{3} *he*

made; (25) s?e^{43}ne^{2}-le^{4} *was put on*; (29) sa^{3}te^{1}-le^{4} *covered with*.

Y: (12) nkhį^{3} co^{3}hmi^{24} *many things*; (13) čhao^{42} *eggs*; (14) nča^{2}są^{34} *sour-corn-gruel*; (14) nka^{3}yi^{3}he^{34} to^{4}ho^{3} khǫą^{3} ši^{3} thį^{1} *everything that there is*; (16) čhao^{42} *egg*; (19) na^{4}-hno^{4} *tobacco*; (20) čao^{34} *ashes*; (21) čhoa^{4}she^{23} *hot poultice*; (24) hnko^{3} nto^{4}ya^{13} *one sweat bath*; (25) hnko^{3} na^{4}hno^{4} škǫę^{13} *a fresh tobacco leaf*; (29) nto^{4}ya^{13} *sweat bath*.

Z: (18) ?i^{4}ya^{1}sį^{3}-vi^{4} *neck here*; (19) ya^{1}sį^{3} *her neck*; (20) ya^{1}sį^{3} *her neck*; (21) ya^{1}sį^{3} *her neck*); (29) (ya^{1}sį^{3} *her neck*).

O: (22) k?ia^{4} kǫą^{3}nta^{3}-?ni^{2} *then it got well-emphasis*; (25) ma^{3}nta^{3} *get well*; (26) ki^{3}ši^{2} *it dried*; (28) ma^{3}nta^{3} *get well*; (29) ma^{3}nta^{3} *get well*.

P: (26) hce^{1}-le^{4}?ni^{3} *her sore-emphasis*; (29) hce^{1}-le^{4} *her sore*.

N: (24) li^{2}koi^{3} *not*; (28) a^{3}li^{2}koi^{3} *not*; (29) ca^{2} ci^{2}koi^{3} *if not*; (29) li^{2}koi^{3} *not*.

2.3. The complete analysis of the text may be seen in the following summary of class occurrence. Here all of the sentences are listed one under the other in the order of the text. The classes included in each sentence are arranged horizontally.

(1)		A	B		
(2)		(A)	B		
(3)	T	C	E	D	D
(4)	T	R	S		
		R	(S)		
(5)		R	(S)		
(6)	X	Q			
(7)		K			
(8)		K			
(9)		K			
(10)		K			
(11)	X	K			
(12)		W	Y		
(13)		W	Y		
(14)		W	(Y)		
		W	Y		
(15)	XT	C	E		
(16)		W	Y		
(17)			Y		
(18)		W		Z	
(19)		W	Y	Z	
(20)		W	Y	Z	
(21)		W	Y	(Z)	
(22)		O			
(23)		Q			
(24)	N	C	D		
		W	Y		
(25)	+	W	Y		
		O			
(26)		O	P		
(27)		R	(S)		
(28)	N	O			
(29)	N	W	Y		
	N	O	P		

3. Several things may be noted here about the structure of the text. Most obvious is the fact that the interpolated linguistic comments in Sentences 6 and 23 stand out as sharply different from the material around them: actually, because of their very different structure they are not analyzable into the same classes as the rest of the text which is the meaning of Q. The changes of speaker in Sentences 3 and 15 also stand out sharply as the only occurrences of Classes C and D other than in Sentence 24, where it marks a change of topic within the daughter's narrative.

The inner structure of the father's part of the text 4–15 is simpler than that of the daughter's part. His is a simple tri-partate structure broken by the interpolated comment. First a series of sentences describing the condition of the neck, second a series of sentences describing the daughter's behavior, and third a series of sentences enumerating the various remedies that were applied.

The daughter, on the other hand, provides in addition to the introduction to the narrative in Sentences 1 and 2, a three fold repetition of the entire story. In Sentences 16–21 she lists the remedies used and states in Sentence 22 that it got well. Then in Sentences 24–26 she reviews the entire matter. Remedies were put on and it got well. In Sentences 27–29 the entire matter is reviewed again from a negative point of view. The neck swelled and wouldn't get well—if remedies

hadn't been put on it wouldn't have gotten well.

In terms of classes as analysed here, the daughter's individual sentences are also more complicated than the father's. It must be remembered, however, that modifying phrases were combined with their heads for assignment to classes and are not taken into account in this statement. Of the father's utterances, about two thirds use only one of the equivalence classes in each sentence, the other third use only two equivalence classes each. In the daughter's sentences, about ten percent use three classes, more than half use two classes, and only about a third use only a single class.

One point of special interest in the assignment of words to classes is the fact that the sole member of Class A is čhao^{42} *egg*. *Egg* is also a member of Class Y in Sentences 13 and 16. These two classes cannot be combined because of the difference in their grammatical relationship to the verb with which they occur. The egg of Class A is subject, the egg of Class Y is direct object. In Mazatec there is no transformation yet discovered which would make it possible to shift these grammatically different elements into comparable relationships. This seems to indicate that in this text, the 'egg' which caused the illness is a different entity from the 'egg' which was used later as a remedy.

Since the text under discussion is very brief and relatively uncomplicated, it might be argued that the structure discovered by the use of the discourse analysis techniques could equally well have been observed by other techniques or even by simple inspection. Since, however, the discourse analysis techniques gave results of some interest in this simple text, it might be postulated that the same techniques would give fruitful and interesting insights into the structure of texts which were too long and complicated to be analysed by inspection.

SPANISH LOANWORDS IN ACOMA: I

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1. Introduction
2. Spanish and Acoma phonemic systems
3. Rules of substitution
4.1. List of loanwords

1.1. Acoma is spoken by about one thousand people at the Indian pueblo of Acoma located about sixty miles west of the Rio Grande, between Albuquerque and Gallup, New Mexico.[1] Acoma belongs to the Keres language family, which includes also six other closely related languages spoken in as many pueblos in New Mexico. Laguna, a Keres pueblo, is located a few miles to the east of Acoma, and is Acoma's closest neighbor; the remaining Keres pueblos are located in the Rio Grande Valley. Other language families represented in the pueblo area are Tanoan, Zuni and Uto-Aztecan. Tanoan, somewhat more diversified than Keres, is spoken in several pueblos in the Rio Grande Valley, from Taos in the north near the Colorado-New Mexico State Line, to Isleta in the south near Albuquerque. About ninety miles to the west is Zuni. Northwest of Zuni, in northeastern Arizona, Hopi, a Uto-Aztecan language, is spoken in several pueblos.

The first Spanish expedition came to New Mexico in 1539, headed by Fray Marcos de Niza, but the Spaniards had no lasting contact with the pueblos until 1598 when Oñate led a small group of soldiers, missionaries and settlers to New Mexico. The first Spanish settlements were in the Rio Grande Valley. The missionaries concentrated their activities in this area and did not establish a mission at Acoma until 1628.

The Spaniards were driven out of New Mexico during the Pueblo Revolt of 1680 and did not return until almost two decades later. After that time the Spanish activity was more intense and spread out of the Rio Grande Valley somewhat. Sometime later two Spanish communities, Cubero and San Fidel, were established near Acoma.

The Spanish influence has been felt most keenly by the Rio Grande pueblos and it has been slighter in the western pueblos, particularly in Zuni and Hopi.

1.2. Spencer has made a study of Spanish loanwords in Keres.[2] His object was to make a preliminary statement about the nature of the linguistic borrowing. Unfortunately he tried to use one phonemic system for all seven of the pueblos, and there are a number of differences between the languages. Consequently he ignores some of the phonemic distinctions that are found in most or all of the Keres pueblos. Nevertheless, his study is useful in the cases where we suspect that a Spanish word has been spread by interpueblo borrowing.

2.1. It is highly probable that the Spanish of the mission period was different from the Spanish of New Mexico today. Since we are not able to reconstruct the phonemic system of that period, we will use the analysis of Co-

[1] All the material for this paper was gathered in the San Francisco Bay Area from 1956 to 1958, under grants from the University Patent Fund and the Department of Linguistics, University of California, Berkeley. Most of the material was obtained from Anne Hansen, an Acoma speaker about thirty years old who lives in San Francisco, California. Mrs. Hansen does not speak Spanish, but she recognizes most loans. Only the older Acomas speak Spanish.

Grateful thanks are due to Mary R. Haas and George V. Grekoff who offered many helpful suggestions.

[2] Robert F. Spencer, Spanish Loanwords in Keresan, SJA 3.130-146 (1947).

lorado Spanish by Trager and Valdez[3] for all Spanish words regardless of period of borrowing. Only in one borrowing, the word for *Spaniard* (see **4.1**, **4.2**), do we find any evidence that the early Spanish was appreciably different.

A list of the Spanish phonemes follows.[4] Consonants (p t č k; b d g; f s x; m n ñ; l y; r r·); vowels (i, e, a, o, u); stress (′).

2.2. New features introduced by Spanish and English are not included in the following statement on Acoma phonemics. At the same time we do not mean to imply that these statements describe sixteenth century Acoma even though there can be little doubt that the phonemic system of that time was very similar.

Consonants: b d d^y g; p t t^y k; ṗ ṫ $ṫ^y$ k̇; ʒ ǯ ʒ̣; c č ç; ć č̣ ḉ; s š ṣ; ś ṣ̌ ṣ́; m n; ṁ ṅ; w r y; ẇ ṙ ẏ;ʔh.

Vowels: i ə u
e
a ·(length)

Tonal accents: ′ (high), ^ (falling), ’ (glottal) b d d^y g, and ʒ ǯ ʒ̣ are voiceless unaspirated stops and affricates; p t t^y k, and c č ç are aspirated stops and affricates. ʒ̣ ḉ, and ṣ ś are retroflex affricates and fricatives. s is followed by a theta offglide, [sθ].

Only the vowels ə and u require any explanation since both show considerable variation. ə is unrounded and varies from central to back, the most common station being central. u is a back rounded vowel. Both vowels vary from high to high-mid, the most common station being high-mid. The only consistent feature distinguishing the two vowels is unrounding versus rounding.

Unaccented vowels, especially in final position, are often voiceless. The conditioning factors are complex and will not be given here.

The syllable shape is (C)CV(V). The second vowel may be i, u, or the vowel phoneme of length written with a raised dot (·). Only one type of consonant cluster is found, s plus any stop. s in this environment is phonetically either [š] or [ṣ], the variation in part being conditioned by the following stop and vowel, in part being free. The cluster sč [šč] is found in one morpheme, perhaps borrowed from another Keres language.

Unaspirated stops and affricatives are not found after the last accent in a word. Retroflex consonants and dental stops are not found before front vowels.[5] r is not found in initial position, and ṙ is found in initial position in only one word, ṙêuṙêubáša, name for a Kachina dancer.[6] w is never followed by u. ǯ is found in one word only, ǯí·ǯi·, address form for sibling of the opposite sex.

Every word has one or more tonal accents. The glottal accent is found only with vowel clusters (vowel plus i, u, or length). The falling accent is rarely found with single vowels and then only in certain restricted environments. The high accent is found with both single vowels and vowel clusters. The glottal accent differs from the falling accent in that the vowels are rearticulated, and sometimes accompanied by glottal stricture.

There are two types of morphophonemic alternations that need to be mentioned. There is an accentual alternation, or accent ablaut, and an alternation between unaspirated and aspirated stops. The latter al-

[3] G. L. Trager and G. Valdez, English loans in Colorado Spanish, American Speech 12.34-44 (1937). New Mexico Spanish is almost identical with Colorado Spanish.

[4] We have made the following changes in Trager and Valdez's transcription: č for c, and y for intervocalic i. There are problems in the interpretation of Spanish [u̯] and [i̯], but the solution has no bearing on this study. Therefore we will use the Spanish orthography which represents these features by vowel combinations.

[5] This distributional fact is in part a function of the phonemic solution. The contrast between dental and palatal stops is neutralized in this environment; there is free variation between the two positions, but palatalized stops are the most common variant.

[6] See Leslie A. White, The Acoma Indians, BAE-R 47.17-192. The Kachina in question is number 45 in the list (p. 80). The word is probably borrowed from an eastern Keres language which preserves initial r (and presumably initial ṙ as well).

ternation is in part conditioned by the accent ablaut. Compare ʔú·bú·búci *fan* and sáubû·puca *I fanned myself*.

2.3. It is necessary to point out that the symbols used in this article do not have the same values in Acoma and Spanish. Thus b d g represent voiceless unaspirated stops in Acoma but voiced stops and fricatives in Spanish. p t k represent voiceless aspirated stops in Acoma but voiceless unaspirated stops in Spanish. Prevocalic s in Acoma is [sθ] but [s] in Spanish. s before a stop in Acoma is [š] or [ş] but [s] in Spanish. The acute accent indicates a tonal accent in Acoma but stress in Spanish.

3.0. The rules given below cover common and recurrent substitutions.[7] Most irregular substitutions are listed under the individual items in **4.2**.

When an Acoma stop or affricate is substituted for a Spanish stop or affricate it is unaspirated before an accented vowel, aspirated before an unaccented vowel. We mark such substitutions by small capitals. There are three exceptions to this rule: *chili*, *mail carrier* and *spoon*. In part this reflects alternations within the Acoma morphophonemic system.

3.1. The treatment of single consonants follows.

/b/[8] > w: *bishop*,[9] *Christmas*, *cow*, *leather*, *penny* and many others. /p/ > p: *captain*, *pears*, *pie*, *St. Peter* and many others.

/d/ > r in medial position: *hunter*, *lieutenant governor*, *Saturday*, *silk* and *sword*; and > t in initial position: *Sunday* (only example). /t/ > t except before Acoma i and e: *bench*, *bull*, *captain*, *Matachina dance* and several others; and > tʸ before Acoma i and e: *oil*, *store*, *tea* and a few others. These conditioning factors also hold true for /t/ and /d/ in clusters.

/č/ > č: *bullet*, *Christmas*, *curly*, *pig* and several others.

/g, k/ > k: *Albuquerque*, *Cubero*, *St. James* and many others.

/f/ > w in medial position: *coffee* and *stove* (only examples); and > p in initial position: *fiscal* (only example). /s/ > s: *bench*, *cook*, *Friday* and many others; but > š in *cow*, *goat* and *Monday*. /x/ > h: *bacon*, *box*, *Christ* and *tin can*.

/m/ > m: *apple*, *butter*, *white man* and many others. /n/ > n: *apple*, *box*, *money*, *white man* and many others. /ñ/ > n: *wild animal* (only example).

/l, r, r̆/ > r: *beads*, *burro*, *Catholic*, *white man* and many others. /y/ > y: *bench*, *butter*, *foreman*, *lieutenant governor* and a few others.

Vowel initial > ʔ plus vowel: *bishop*, *hour*, *gold* and several others.

There are two loanwords that have h where w would be expected, *burro* and *California*. In both cases the following vowel is stressed /ú/ or /ó/. The consonant is altered to prevent the occurrence of the non-permitted sequence *wu.

3.2. There are not enough examples of consonant clusters to find more than a partial pattern. The examples given below are exhaustive.

In general, /r/ as first member of a cluster is dropped. /rd/ > r: *foreman* (note that medial /d/ also > r); and > t, tʸ: *bullet* and *Tuesday*. /rk/ > k: *Albuquerque* and *apricot*; and rik: *Wednesday*. /rn/ > n: *Friday*; and rin: *California*.

/r/ as second member of a cluster shows a variety of treatments. /br/ > raw (metathesis): *goat*. /pr/ > p: *principal* and *Protestant*. /fr/ > r: *Francis*. /n fr/ > war: *St.*

[7] We use the term 'substitution' rather than the term 'interference' used by Uriel Weinreich (Languages in Contact, Publications of the Linguistic Circle of New York—Number 1, 1953). In addition we use many terms common in historical grammar. The terms are unambiguous because the results of historical change and of borrowing are very similar. However, we do not mean to imply that the processes are similar; they are not.

[8] Material between slant-lines (/. . ./) indicates Spanish phonemes. When slant-lines are not used the material is understood to be Acoma unless otherwise stated.

[9] The list of Acoma and Spanish forms is found in **4.1**.

Francis. /dr/ > r: *godfather, godmother* and *St. Peter*. /kr/ > k: *sexton*; and > gr: *Christ*.

/l/ as first member of a cluster is found in four loans. /lb/ > raw: *Albuquerque* and *apricot*. /ld/ > nd: *soldier*. /lč/ > ž: *mattress*.

Clusters with /s/ as first member are seldom simplified. /sp/ > sp: *bishop* and *sword*. /st, str/ > st, stʸ (see **3.1**): *basket, Christ, pie, pistol, Protestant, ribbon, St. Stephen, sexton, sheep herder, stove, teacher* and *wild animal*. /sk/ > sk: *fiscal* and *St. Francis*. /sm/ > sim: *Easter*. /sn/ > s: *peaches*.

Nasal clusters are normally retained. /mp, mbr/ > mp: *camp, godfather* and *wire*. /nt, ntr, nd/ > nt, ntʸ (see **3.1**): *butter, coriander, Indian, lard, lieutenant governor, penny, Protestant, railroad tracks, saint, St. James, St. Mary, spot* and *window*. /nč/ > nč: *Comanches* and *ranch*. /ng/ > k: *Sunday*. /nk/ > nk [ŋk]: *bank*. /ns/ > nis: *apple*; and > ns: *Francis, Lawrence, principal, St. Francis* and *St. Lawrence*.

Spanish 'San' (*saint*) followed by a consonant sometimes develops irregular reflexes: /n xu/ > w in *St. John* and /n l/ > wur in *St. Lawrence*. The second form is particularly strange because it contains the sequence wu which otherwise is not found in Acoma. Further, there is nothing in the Spanish model that would lead one to expect wu.

3.3. Spanish stress is reflected in Acoma by tonal accent and vowel length. A few general rules may be formulated and some general tendencies may be observed, but for the most part it is not possible to predict which tonal accent a given word will have.

Unstressed vowels in Spanish become short unaccented vowels in Acoma. There are only two exceptions, *Spaniard* and *tin can*. Spanish stressed vowels have three developments in Acoma: short vowel and high accent; long vowel and high accent; and long vowel and falling accent. The last development is the most common, being found in over two thirds of the words.

When a stressed vowel of Spanish comes to stand in final position in Acoma, the final vowel is short and has the high accent: *coffee, corral, court, tea* and several others. There are only two exceptions, *ox* and *king*, and it will be noted that both these words are monosyllabic and have vowel clusters in the Spanish form. The same accent-vowel length pattern is found before a nasal cluster: *bank, camp, Indian, saint, St. Lawrence* and several others. In addition, *Albuquerque, California, Christ, goat, Thursday* and *Wednesday* show the same pattern.

The forms that have the high accent and long vowel are less easy to characterize. All the Spanish forms of the shape CV̂sV have the shape CV̂·sV in Acoma: *cat, cheese, mass* and *table*; *glass* is the only exception. The remaining forms show no pattern except that the accented syllable in the Acoma form is never followed by a consonant cluster: *gold, silk, sugar* and several others.

The majority of the loanwords have the falling accent and long vowel. Almost all the forms that show the change /-V̂C/ > -VCV (see **3.5**) have this pattern: *coin, hunter, melon, rice* and many others. The remaining words, over half of all the loanwords, show no pattern, except in a negative sense; they seldom show patterns that are common for the high accent.

3.4. In discussing the vowel quality it is necessary to consider stressed and unstressed vowels separately.

The development of stressed vowels is quite regular. /í/ > i: *bishop, curly, spots* and many others; but > ə in *chili* and *Spaniard*. /é/ > e: *cowboy, pears, sheep*, etc. without exception. /á/ > a: *apple, corral, white man*, etc. without exception. /ó, ú/ > u: *box, burro, gold, sugar, whore*, etc. without exception.

The development of unstressed vowels is somewhat more complex /i/ > i: *bench, butter, chili, cook*, etc. without exception. /e/ > i: *Albuquerque, Friday, number* and many others; but > e in *melon, penny, white*

man and *window*;[10] > a in *beet* and *wire*; and > u in *Christmas*, *prayer* and *wild animal*. /a/ > a: *bench*, *foreman*, *leather* and many others; but > i in *apple*, and *sword*; > u in *mile* and *spoon*; > e in *sheep herder*; and i in *lard*.

Usually /o/ > u: *burro*, *cook*, *godmother*, *mattress*, *minute* and many others. There are, however, several examples of /o/ > a: *bishop*, *bull*, *Christmas*, *cowboy*, *drunkard*, *foreman*, *glass*, *gold*, *mule* (1), *number*, *penny*, *soldier* and *Sunday*. In *drunkard* and *penny* the change is to avoid the non-permitted sequence *wu. The change in many of the remaining words, as *bull* and *foreman*, could be explained as dissimilation from the u. However dissimilation is not found in other words of like phonetic structure, as *burro* and *mattress*. Nor can dissimilation account for the change in all the forms, e.g. *glass*. The situation with /u/ is very similar. /u/ usually > o: *Christ*, *negro*, *Lent* and a few others; but > a in *Albuquerque* and *peaches*. The change in *Albuquerque* can be attributed to the preceding w, but not so with *peaches*.

There are not enough examples of vowel clusters in the Spanish words to find any consistent pattern. Therefore we list the examples we have in traditional Spanish orthography except that stress is marked.

ié > é in *store* and *Wednesday*, > yê· in *feast day* and *Friday*. iá > iyâ· in *St. James*. ía > î·ya in *St. Mary*. ia > a in *California*. ió > yû· in *God*. io > yu in *beads*, > u in *Indian* (the i conditions the change of the preceding dental stop to a palatal stop).

eá > yâ· in *coin*. éi (éy) > âi in *oil* and *king*. éo > é·yu in *mail carrier*.

ué > ê· in *Christmas* and *ox*, > úwe in *Thursday*. uá > wá in *St. John*. ua > u in *curd* and *Easter*.

In four words, *beads*, *coin*, *God* and *Friday*, the Spanish model has a vowel cluster with a high front unstressed vowel as first member. In these words the vowel has become y in the Acoma form and has replaced the preceding consonant. A similar phenomenon is found with u in *Christmas*, *ox* and *St. John*, except that the w found in the Acoma form in two of the three instances could be explained by the preceding /b/. Perhaps the development of *feast day* may be interpreted in an analogous fashion.

3.5. Since every word in Acoma ends in a vowel, Spanish words that end in a consonant have to be altered in some fashion to fit the Acoma canon. Either the final consonant is dropped, as in *corral*, *Lent*, *prayer*, *St. John*, *St. Stephen* and *song leader*, or more commonly the vowel i or a is added. i is always added to /s/: *cow*, *Friday*, *goat*, *God*, *Monday*, *rice*, *Thursday* and *Wednesday*. (The Acoma sequences -si and -ši are more similar to the Spanish /-s/ than it may seem. The final i is voiceless in this environment and sometimes is realized as a long [sθ·] and [š·] with unrounded lips and fronted articulation. Before ə these consonants are made with unrounded lips and backed articulation, and before u with rounded lips and backed articulation.)

No rule can be stated for the remaining final consonants. /-n/ > -na in *box*, *captain*, *mattress*, *million*, *ribbon* and *sexton*, > -ni in *bacon* and *melon*. /-l/ > -ra in *beet* and *pie*, > -ri in *coin*, *fiscal* and *principal*. /-r/ > -ra in *hunter* and *sheep herder*, > -ri in *train*.

4.1. In the list given below the English translation is first followed by the Acoma form and then the Spanish model in the traditional orthography. The meaning of the Spanish word is given in single quotes, but only if it is sufficiently different from the Acoma meaning. NMSp. indicates New Mexican Spanish forms and glosses when they differ from Mexican Spanish.[11] (T.)

[10] All four examples are preceded and/or followed by a nasal.

[11] All such forms and glosses are taken from E. C. Hills, El español de Nuevo Méjico (1906), in El español in Méjico, Los Estados Unidos y la América Central, Instituto de Filogía, Buenos Aires, Pedro Henríquez Ureña, Ed. (1938), p. 1–73; and from F. M. Kercheville, Preliminary Glossary

indicates that the word is a title of an officer in the pueblo. Additional discussion of some of the words is found in **4.2**.

Albuquerque; ʔarawagéki; Albuquerque.
Apaches; ʔabâ·či; Apache (see **4.2**).
Apple; manisâ·ni; manzana (see **4.2**).
Apricot; ʔarawagú; albarcoque (or albarcoán?), NMSp. (see **4.2**).

Bacon; hamû·ni; jamón (de almuerzo), NMSp.
Bank; wánku; banco.
Basket (non-Indian, usually laundry basket); kanâ·sta; canasta.
Beads (silver only?); rusâ·yu; rosario, 'rosary'.
Beet; matawê·ra; betabel (see **4.2**).
Bench (or *stool*); siyê·ta; silleta.
Bishop; ʔuwî·spa; obispo.
Blond (or *light complexion*); wê·ru; huero.
Box (not *coffin*); kahû·na; cajón.
Bucket (or *tub*); kuwê·ta; cubeta.
Bull; dû·ra; toro.
Bullet; kadû·ču, kadû·či; cartucho.
Burro; hû·ru; burro.
Butter; mantʸigî·ya; mantequilla.

Cacique (T.); kasî·ki; cacique.
California; karihúrina; California.
Camp; gámpu; campo, NMSp. (<Eng.).
Captain (T.); kapidâ·na; capitán.
Cat; mú·sa; musa (see **4.2**).
Catholic; katû·ri; católico (see **4.2**).
Cheese; gé·su; queso.
Chewing tobacco; tawâ·ku; tabaco.
Chili; čâ·ri; chile (see **4.2**).
Christ; hisugrístu; Jesucristo.
Christmas; načuwê·na; Nochebuena, 'Christmas Eve'.
Coffee; kawé; café.
Coin; yâ·ri; real (see **4.2**).
Comanches; kumánči, kumánču; Comanche (see **4.2**).

Cook (T.); kusinê·ru; cocinero.
Coriander; kurántu; culantro.
Corral; kurá; corral.
Court; kumanirá; comandancia? (see **4.2**).
Cow; wá·kaši; vacas (plural, see **4.2**).
Cowboy; wagê·ra; vaquero.
Crazy; rû·ku; loco.
Cubero; kuwê·ru; Cubero (place name).
Curd; kuhâ·ru; cuajada.
Curly (of hair); žî·nu; chino, NMSp.

Drunkard; warâ·ču, warâ·či; borracho.

Easter; kuré·sima; cuaresma, 'Lent'.

Feast day; hyê·sta; fiesta (see **4.2**).
Fiscal (T.); pisgâ·ri; fiscal.
Foreman; mayarû·ma; mayordomo (see **4.2**).
Francis; ransî·sku; Francisco.
Friday; yê·nisi; viernes.

Glass (for drinking); wâ·sa; vaso.
Goat; gárawaši; cabras (plural, see **4.2**).
God; yû·si; Dios.
Godfather; kumbâ·ri; compadre.
Godmother; kumâ·ri; comadre.
Gold; ʔú·ra; oro.

Horse; kawâ·yu; caballo.
Hour; ʔú·ra; hora.
Hunter (T.); kasarû·ra; cazador.

Indian; ʔíntʸu; indio.

King; râi; rey.
Kitchen; kusî·na; cocina.

Lard; mandʸê·ki; manteca (see **4.2**).
Lawrence; rurénsu; Lorenzo.
Leather; wagê·ta; vaqueta, 'sole leather'.
Lent; ʔayuná; ayunar, 'fast'.
Lieutenant governor (T.); ʔayurántʸi; ayudante.

Machine (or *engine*); má·kina; máquina.
Mail carrier; guré·yu; correo.
Mass; mí·sa; misa.

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of New Mexican Spanish, The University of New Mexico Bulletin, Language Series no. 247, p. 1–68 (1934).

Matachina dance; matažî·na; Matachina.
Mattress; kužû·na; colchón.
Melon; merû·ni; melón.
Mile; mí·yu; milla.
Million; miyû·na; millón.
Minute; minû·tu; minuto.
Monday; rû·niši; lunes (see **4.2**).
Money; ninê·ru; dinero (see **4.2**).
Mule (1); mû·ra; mulo.
Mule (2); mâ·ču; macho, 'male animal' (esp. mule).

Negro; murâ·tu; mulato, 'mulatto'.
Number; nû·mira; número.

Oats, oatmeal; ʔawê·na; avena.
Oil; asâitʸi; aceite.
Ox (?); wê·; buey (see **4.2**).

Peaches; marâ·si; durazno? (see **4.2**).
Pears; bé·ra; pera.
Penny (or *small coin*); sendâ·wa; centavo.
Pie; pasdʸê·ra; pastel.
Pig; kužî·nu; cochino.
Pistol (lit. *pistol-gun*); pisdû·ra ʔú·čáyúci; pistola.
Prayer; rusá; rezar (see **4.2**).
Principal (T.); pinsibâ·ri; principal.
Protestant; putʸistántʸi; protestante.

Railroad tracks; yánta; llanta 'rim (of tire)' (also yanta, 'train', NMSp.).
Ram (wild?); čiwâ·tu; chivato, 'kid'.
Ranch; ránču; rancho.
Ribbon; risdû·na; listón.
Rice; ʔarû·si; arroz.
Rich; rî·ku; rico.
Rug (*Navajo rug* or *Chimayó blanket*); sarâ·pi; sarape, 'shawl'.

Saint; sántu; santo.
St. Ann (or *Santa Ana*, place name); sandâ·na; Santa Ana.
St. Francis (or *San Francisco*, place name); sawaransî·sku; San Francisco.
St. James; santʸiyâ·ku; Santiago.
St. John (or *San Juan*, place name); sawá; San Juan.
St. Joseph; sahusé; San José.
St. Lawrence; sawururénsu; San Lorenzo.
St. Mary; santamarî·ya; Santa María.
St. Peter; bê·ru; (San) Pedro.
St. Stephen; sanisdʸê·wa; San Esteban.
Saturday; sâ·waru; sábado.
Sexton; sakisdâ·na; sacristán.
Shawl; dâ·paru; tápalo, NMSp.
Sheep; kanê·ru; carnero.
Sheep herder; pesdû·ra; pastor.
Silk (or *rayon*); sé·ra; seda.
Soldier; sandâ·ru; soldado (see **4.2**).
Song leader (T.); mayú; mayor.
Spaniard (or *Spanish American with light complexion*); kasdʸórá; Castilla, 'Castile' (see **4.2**).
Spoon; kučâ·ru; cuchara.
Spots (or *freckles*); bíntu; pinto.
Store; dʸénta; tienda.
Stove; ʔisdû·wa; estufa.
Sugar; ʔasú·kara; azúcara, NMSp.
Sunday (or *week*); tamî·ku; domingo (see **4.2**).
Sword; ʔisbâ·ri; espada.

Table; mé·sa; mesa.
Tea; dʸé; té.
Teacher; mê·stu; mestro, NMSp. (see **4.2**).
Thousand; mî·ri; mil.
Thread; ʔî·ru; hilo.
Thursday; ṣúwewesi; jueves (see **4.2**).
Tin can (empty, only); há·rú; jarro, 'pitcher, jug'.
Train; wabú·ri; vapor, 'steam'.
Tuesday; mâ·tʸisi; martes.

Virgin Mary; marî·ya; María.

Wagon; karê·ta; carreta.
Wednesday; mérikusi; miércoles (see **4.2**).
White man (or '*Anglo*'); merigâ·na; americana (see **4.2**).
Whore; bû·ta; puta.
Wild animal (of those that are normally domesticated); musdʸê·na; mesteña.
Window; mendâ·na; ventana (see **4.2**).
Wine; wî·nu; vino.
Wire; arámpa; alambre.

A COMPARISON OF FIVE SALISH LANGUAGES: IV

GLADYS A. REICHARD†

4. Stem and word
5. Noun formation
6.0. The verb stem
6.1. Static verbs
6.2. Active verbs
6.3. Prefixes
6.4. Suffixes

4. The languages here under consideration leave little doubt that the fundamental Salish unit is an independent verb stem. The verbal stems may be modified by various processes to form other kinds of words. The grammatical processes are: phonetic change, of vowel or consonant; prominent among the phonetic changes are glottalization, and vowel change influenced by the surrounding consonants and accent. Other processes are reduplication and affixing. The processes are found in varying degree in all the languages, differing somewhat in function and meaning, but nevertheless outstanding in general stability. Less well developed, but sufficiently notable to be of theoretical interest are nominal incorporation and verbal compounding.

Nouns are often formed by the prefix s-nominalizer, although in each language some nouns do not have it. In S-D there is absolutely no distinction between some nouns and verbs, for example, xod *burn, fire, fuel, woodbox*; t'ok^{w}' *go home, home*; c'a^{ɔ}a *play, plaything*. Generally the stem is preceded by s when the noun is meant, and this prefixing process is relatively free in all the languages, but is of course limited in certain ways within each.

In analyzing Salish then the first thing to do is to isolate the stem, a matter of considerable ease, at least in the Interior languages, although a few stems may be slightly disguised for phonetic or morphological reasons. More often than not the stem is independent or initial, or it immediately follows s-nominalizer or some affixial relative of s — š, c, č, č', in short, some other sibilant. The determination of the independent stem may depend upon the recording — Tweddell did not always realize ʔex^{w} or ɔx^{w} *want*, as an independent stem and considered it as a suffix or prefix. Similarly, he treated elements like tu *past*, ƛ *future*, as prefixes.

From here on I may sometimes speak of 'words', rather than of 'nouns' or 'verbs', since many verbs are independent or nominalized verbal forms, or nouns are verbalized nominal forms. Closely related to the independent forms just discussed is the completive form of the verb, which like the 'adverb' is independent in the third person, being devoid of pronominal suffixes. This third person completive is the 'primary' stem form, and usually has the essential or 'strong' vowel. The use of 'primary' in this connection has no reference to 'original' but means the same thing as, say, the infinitive in Indo-European, a form from which to work.

In all the languages the continuative is a nominalized verb, being formed with s- or a related prefix, as e-, es-, i- ic-. The simpler forms of the continuative, that is, intransitive and transitive without an expressed object, are sometimes complete with the forms e-s-; some, like Kal, have a frame consisting of a prefix and suffix.

Some of the languages, especially in the Coast region, have the nominalized forms for aspects other than continuative, the only difference being in the prefix. If they do, we need interpret only the variable aspective prefix, the nominalized verb form being invariable. This interpretation simplifies and clarifies a great many constructions which have previously seemed disparate.

For phonetic reasons, usually contraction, some of the particles, independent on the

Coast, become prefixes in CA and Kal, making the forms longer and more complicated. Nevertheless, the procedure applies in general. Some pronouns may be considered as verbal forms. The concept of verbal modification must also be extended in the discussion of affixing. It is well to keep in mind therefore that there is no marked subdivision between nominal and verbal categories or treatment, except possibly in the completive and customary of some languages.

The interdependence of prefix, stem, and suffix has been noted for CA. The analysis of the stem symbolism is similar no matter what the position of the sound is in the complex. Some elements which are affixes in some languages are independent in others. The following suggestions were made for CA: t'ínæ$^{?\infty}$ *ear*, seems to be composed of t-prefix (> t' before a vowel initial) and -inæ$^{?\infty}$ *ear*; s-nun *success* < s-nom and -nun *succeed at*, as well as other examples.[1]

Kal has t'ené *ear*; -ené is the suffix for *ear*, but Kal apparently does not have the prefix t- *on and part of*, or the rule of glottalization before a vowel initial.

The Kal noun cut *habit, manner, way*, is interesting in the light of the reflexive suffix -cut *self* (Kal §164, p. 139). S-D ?elks *end, tip*, is independent; it should be compared with CA -alqs, Kal -ałq *road, race, contest*, and CA -i'qs, Kal -aqs, Cheh -aqs, -qs, and S-D -ks *nose, beak, point, tip*.

The CA causative -im should be noted in comparison with the Kal free particle em *in vain*.

Till has independent súhəs (súhəs-əs *his tail*) *tail*, comparable with CA suffix -ups *tail*, and s-čs-ups-ən *tail* (s-*nom.*, čs- *after*, -ups *anus*, -ən *that which*). Cheh has só·-ps-ənč *tail* (s-*nom.*, -o·ps *tail*, -ənč *back side of, buttocks*). Here -ənč corresponds with CA -inč *hollow, stomach*. The essential point is that in Till the element -uhəs (< Cheh -ops, CA -ups) is the stem, as it seems to be in Cheh where it takes the suffix -ənč. In CA the element -ups has a prefix čs- as well as a suffix -ən.

Till independent s'óos *body*, may be equivalent to nominalized CA -ilgwæs *stomach, heart, essential part of torso*, which has not been found as a finite verb. But Till has also y-n-kas *heart*, which may correspond with CA y- < s-*nom.*, n- *in*, -ilgwæs *heart, mind*.

Cheh y-əns *tooth* is comparable with CA -ins *tooth*. If CA -ins were capable of nominalization with s-, its form would be y'ins (CA §124). (The CA word for *tooth* is χælæxʷ.)

Another Cheh example is yə́ptən *tracks*: -əp is comparable with CA -ip *back, bottom, behind*; Cheh -tən > CA -ən *that which*; and the relation between s and y is the same as in yəns *tooth*.

5. In all five languages nouns are formed in different though comparable ways. The greatest discrepancy is in the selection of the compounded elements. In all, s- plus a verb may be a noun or a verb, but the verbal form is sometimes fossilized in the noun, and found nowhere else in the language. Just as all the languages have s-nouns, so they all have many nouns without s-initial. Kal relies more on diminutive reduplication for derivation than any of the other languages compared and, since it has a diminutive prefix ł-, many derived diminutives do not have s-initial; possibly ł-s > ł as in CA (§145).

Another nominalizing prefix is common to S-D, CA, and Kal. In CA it is syæ- *one whose occupation is...*, and although it seems to be a free prefix, it is used in a more or less specialized sense. In Kal the corresponding sxʷ- seems to be much more generalized, a personal agent, *...is done by a person, a person who...*(Kal §137). In S-D səxʷ, probably an independent element, seems to be any kind of agent or instrument. Interestingly enough, none of the examples for which these forms are available concern the same nouns: CA sya-n-cáw'-əm *dishwasher*; sya-q'ə́l-stq *farmer*; syæ-wíš-ɬxʷ

[1] IJAL 11:47–48, 1945.

mason; syæ-šəl-ítkup *woodchopper*; Kal sx^{w}-tél-u·lu·lí *blacksmith*; sx^{w}-q^{w}íl-əm *cheater*; sx^{w}-tiyáq^{w}t *fighter*; sx^{w}-člip *hunter*; sx^{w}-mín'əm *painter*; sx^{w}-x^{w}tip *runner*; sx^{w}ə-n-kun-ém *singer*; sx^{w}ə-m'əm'-éyém *teacher*; sx^{w}-q'e?ím *writer*; S-D səx^{w} k^{w}át-ač *ladder*, səx^{w} lič *saw*, səx^{w} gwádi *seat, chair*.

Although the continuative is a nominalized verb form it is not often used as a noun; the only ones comparable are: CA ic-pú?us *heart, desire*; Kal esənxal-é?us *bridge*, es-q^{w}é *streambed*, es-ɬóx^{w} *hole*, esən-mq'-úps *hump, knoll*, esə-məq^{w}' *mountain*, es-ɬ-ɬq'-úléx^{w} *prairie, open land*, es-č-ħóyə-qən *woodpile*; S-D é-laq' *rear*. Since Till and Cheh have no continuative prefix except s- there is no way of distinguishing the s-nominal forms from the nominalized verbs.

6.0. The dominant patterns of the Salish stem are consonant-vowel-consonant, consonant-vowel-consonant cluster, or consonant cluster-vowel-consonant. A few stems are composed of vowel-consonant or vowel-consonant cluster. Salish often tolerates long clusters, but in the stem of the languages here considered, there is usually an identifying vowel, which may change from strong to weak, or be lost. The vowel is perhaps more often identifiable in Cheh, S-D and CA than in Till and Kal. Vogt often isolates the stem for Kal as a consonant cluster without a vowel, but an examination of his examples suggests that the same principle operates for Kal as for CA. Because of the frequent shift of accent from stem to suffix it is probably more difficult to get forms with accented stem in Kal than in CA, but in the cases where the third person completive intransitive is listed, the strong vowel is given.

The third person completive is often the stem with no modification of any kind. Some stems have more than one syllable, but a complete understanding of all the affixes would doubtless show that certain suffixes have attached themselves to the stem to form themes.

Affixing often affects the character of stem vowels, and may be the reason for contractions which may omit the vowel and result in a consonant cluster. Position, of affixes and of words in the sentence, is important. The tendency toward agglutination in the Interior languages results in some noun incorporation, and probably in verbal compounding (as in Till). In only the simplest words is any one of these processes used alone, more frequently they are interlocking. Prefixes and suffixes indicate person, as we have seen in the series of personal pronouns; a frame, consisting of prefix and suffix, may be combined with reduplication, and all are influenced by stress and vowel change.

6.1. In CA and Kal static and active verbs are differentiated. Since some of the forms overlap, they have sometimes been treated as a single category. One reason for the resulting confusion is that oppositions were not always obtained. However, Till and S-D show no clearcut evidence that static and active verbs are treated differently. Edel was aware of the problem and concluded that the s- and zero verb forms were alternants in Till. The Cheh notebooks, especially the texts, indicate a difference which cannot be ascertained from the translations.

As is to be expected, static verbs are more often found in the third than in other personal forms, but they may be personalized by affixing the intransitive pronouns. The treatment of these forms is summarized from CA, the only language in which the oppositions are available. There seems to be evidence, which will be cited, that most of the devices used in CA are present in the other languages as well.

6.1.1. The CA prefix æc- *an external state has been brought about, a condition has been added* is identical in form with æc- customary, but it is distinct in use and meaning: æc-pέn' *it is in a state of having been bent*; æ^{ɛ}-t'íc x^{w}æ pəlέms (æ^{ɛ}t' < æc-t') *the prune is sugared (covered with sugar)*; æ^{ɛ}-lúp (æ^{ɛ}l < æc-l) *it is in a state of having been dried.*

Kal es- > CA æc- is not distinguished from Kal continuative es-. . .-suffix, but the following examples seem to indicate that they are distinct: es-t'ísk^{w} *it is bent, crooked*; es-k'úl' *it is made*; es-sáq' *it is split*; es-cáq *it (boat) lies on shore*; es-t'úk^{w}' *he is lying*; es-ən-t'áq *there is tobacco, it is laid in (pipe)* (t'aq *lay soft substance*).

Till and Cheh seem not to have the processes or distinctions above, probably because such meanings are taken care of by independent verbalized adverbs. With some exceptions which will be noted, the same is true of S-D.

In S-D, ʔáco-, ʔáco- may possibly b6 related to æc- *condition has been added*, as indicated by one of Tweddell's suggested translations, *in process of*, but of course he may mean by this the customary of CA and Kal. The examples point to the latter interpretation except possibly: ʔáco xod *it is burning now*; ʔáco bak^{w}ɬ *he is getting hurt*; ʔáco t'ákos *he is getting blind.*

6.1.2. CA u^{u}- indicates *condition is within a subject and has become a part of it*: u^{u}-t'íš x^{w}æ pəlóms *the prune is sweetened (sugar has been added to liquid in which prune is cooked)*; u^{u}-súl *it is cold (as stove), cold has become part of it throughout*; u^{u}-cél' *he is fierce*; u^{u}-q^{w}áɻ^{w} *he is foolish*; u^{u}-šar *he is lazy*; u-q^{w}ac-q^{w}íc *each one is warm*; u-čæp-číp u-šət'-šét' *each one is level, it is level here and there, some places are level.*

Compare Kal i > CA u^{u}- *temporary, noninherent quality*: i-t'íš *it is sweet, sugar*; i-čin-t'íɬ *I am dirty*; i-čin-súʔi *I am a little cold*; i-čin-xés *I am well*; i-čin-tɬ'íɬ *I am still, quiet*; i-č'i-səm'ém *I am a coward, a woman*; i-k^{w}-nás *you are wet*; i-č'uʔu *he is gone, absent.*

For S-D Tweddell has a prefix u-, which from his interpretation defies comparison with CA u^{u}- or Kal i-. It may be more closely related to CA u- *just.*

6.1.3. CA -t *inherent, natural state*: t'æš-t x^{w}æ pəlóms *the prune is naturally sweet (because it ripened so)*; sul-t *he is naturally cold*; taɻ-t *it is naturally bitter.*

With duplicated stems -t means *affect, give the effect of, cause.* Note that here the accent is on the first of the duplicated stems as compared with those of Kal below: pás-pas-t *it causes astonishment* (pas *astonish*); lúp-lup-t *it (as shed) keeps dry*; ɻác-ɻæc'-t *it makes people feel strange* (ɻac' *arouse curiosity*); qám-qam-t *it makes for inattention, he is inattentive* (qæm *ignore*); šár-šar-t *it is steep, too difficult to attempt, it affects with discouragement* (šar *be lazy*); páɻ-paɻ-t *his wisdom is effective* (paɻ *be wise*).

Kal has the same device of suffixed -t; Vogt gives many examples and suggests correctly the difference in meaning between i- and -t forms: ɻes-t *good*; ɻem-t *heavy*; xup-t *lazy*; šəp-t *slow*; łáq'-ət *wide, broad*; q^{w}'éc'-ət *full*; xuʔí-t *many*; łuʔ-ət *few*; łiq-t *worn, torn, old*; t'uk^{w}-t *he flew.*

Vogt does not differentiate the meaning of the duplicated forms, but they are probably comparable with those of CA; note the accent: pəɻ-páɻ-t *wise* (paɻ *think*); pɬ-íɬ-t *thick*; p'ɔɻ-p'ɔɻ-út *old, parents*; q^{w}ən'-q^{w}ín'-t *poor*; sən'-sán'-t *tame*; šəl-šál-t *steep*; ɻəm-ɻém-t *they (?) are heavy.*

6.1.4. The CA suffix -p indicates *a state or condition arrived at without the volition of the subject.* It will be noticed that the verbs with -p are potentially nearer active forms, transitional between static and active verbs: qæw'-p *a long object broke*; Raw-p *liquid dropped*; s-č'æd-p *winter began* (č'æd *shade*).

Kal has a corresponding form, the meaning is suggested as *without interference of the subject, without intention.* Since the form, when not followed by other suffixes, may take the accent, the strong form of the suffix is -ap or -ip, the weak form is -p: la-áp *he moved on the water*; x^{w}t-íp *he ran*; qɔm-íp *they died*; t'əp-íp *they stood up*; ca-p *he blinked*; q'áu-p-áɻən *his arm broke*; c'uú-p *he stopped talking*; mɻ-úp *it snowed*; nsɔ́-p *it is all drunk up.*

Kal oppositions are as follows: es-čin-əm'-qín *he is blind*; čin-əm'-qín *he became blind*; n-təlús-ən *I broke his neck*; čin-n-təl-p-ús *I broke my neck, my neck broke*; ac-ʔús-ən *I*

tied them together; ac-p-ə́ʔus *he got caught in a trap.*

The same meaning *without effort on the part of the subject* is achieved in CA by reduplicating the stem vowel and final consonant. The stems that take -p are not modified by this type of reduplication, and vice versa: p'ǽn'-ən' *it has come to be bent*; yáR-aR *they assembled*; t'ǽk'-ukʷ' *he fell* (tǽkʷ' *one lies*); ǽm-əm *it* (*bird*) *lighted* (ǽm *one sits*); p'át'-ət' *mushy substance spilled* (p'at' *pour mushy substance*); č'ǽl-əl-xʷ *hollow object came to upsidedown position* (č'ǽlxʷ *hollow object stands*).

Kal has the same process apparently serving the same purpose. Vogt's explanation does not stress the matter of 'effort' involved. Reduplication of the final part of a verbal stem indicates that the verbal process develops and gradually comes to an end. This seems to agree more exactly with CA medial reduplication, for example, nas *it is wet*, náʔas *it has gradually become wet.* Vogt's remark that this kind of reduplication is usually completive seems to show that the reduplicated final consonant indicates a state rather than an act. But the fact that the same type of reduplication indicates plural controverts it, unless it be that the plurals are distributive, for instance, łaq-q *they sat down, they are in a state of sitting* (*one by one having sat*). This may be an explanation of some of the 'irregular' plurals: tk'-ukʷ' *he fell, he lay down* (tkʷ' *one lies*); k'ul'-l' *he was born* (k'ul' *make, create*); sáq-q'-cən *he gaped, his mouth fell open* (saq' *split*); čin-šál-l *I got lazy*; čin-čɬóq-qʷ'-qən *I got bald* (ɬɔqʷ' *bald*); č-sixʷ-xʷ *it got spilled on* (*him*) (sixʷ *pour, spill*); n-ɬ-t'əq-q-áqs *roads are overgrown* (t'aq *soft, grassy substance lies*); i-kʷ-kul-íl *the sun is shining* (kʷil *hot*); níč'-č'-stən *I shorten it by cutting* (nič' *cut with blade*).

Till has the same process, final reduplication consisting of -VC, often with the vowel accented: da s-lvš-íš-i *I grow angry* (lvš *angry*); c-qæẓ-íẓ-i *I grow angry* (qæẓ *angry*); də c-quɣ-uɣ-ú-i *I fell asleep* (quɣ *sleep*); ła nš-gvl-əl-u *it gets hot* (gəl *hot*); cp. č'i·t gałəq-q *it* (house) *is about to fall* (łvq *rot*).

A few Cheh examples suggest the same process and approximately the same function: it p'á·l-al-ɬ *he woke gradually*; sí·t-it *it would gradually change*; ɪt yæp-p-ɬ *he walked slowly back and forth* (yip *one walks*); it xʷən-á·n-ɬ *he got tired.*

6.1.4. To indicate the opposite of -p and the reduplicated forms in CA, the same reduplicated forms take the additional suffix -əm *it came to be...*of its own volition; possibly this suffix is the causative: pǽn'-ən'-əm *it got bent of its own accord*; uɬ-t'ul-ulsčínt-əm *he rose again* (t'ul *be like a person*).

Kal shows evidence of the same process; the exact meaning is not clear: šəl-l-ám-ən *one inclined to be lazy*; sxʷə-m'e-m'éy'-ém *teacher*; *one whose occupation is instructing.*

Of all the modifications noted here, the Coast languages have comparable forms for final reduplication only.

6.2. The contrast between static and active verbs where it exists is brought out by affixes. In all the languages the outstanding dichotomy of active verbs is in the completive and continuative systems. The completive consists of the primary stem with pronominal affixes. The continuative is a verbal noun introduced by s-nominalizer, the pronominal affixes usually differing in kind and treatment from those of the completive. All non-pronominal affixes are combined within these two patterns. In the discussion of aspect the order Till, Cheh, S-D, CA, Kal will be resumed.

In Till there are finite and subordinated forms distinguished, as are those of CA and Kal, by different pronominal affixes, and sometimes, but not always, by s-nominalizer. The use of these forms seems to be a matter of indifference.

In Cheh and S-D most verbal ideas expressed by affixes in the Interior languages are independent verbal stems to which completive pronouns are affixed. To quote Boas, writing of Cheh, "English adverbs are verbs, and in combinations of two verbs, the first

verb (often our adverbs) takes the pronominal subjective endings while the second verb remains unmodified. If it is a transitive verb it retains the pronominal object. In other words, the association between the transitive verb and its object is fixed, while the connection between verb and subject is loose" (Cheh n. 12). My examination of the pronominal suffixes would modify this statement to the effect that the second verb may repeat the subject of the first verb, and contain the object as well.

A few examples of the completive intransitive are: it xətɬ'-áxən *it's (animal's) shoulder is broken, it-break-arm*; it é·kʷ *he went for it*; xʷə́kʷ-čən əc kʷan-á·n *I held it firmly, firmly-I held-it*; xé·wič-čən a?is *I am very sick, very-I am sick.*

Completive transitive: it pəq-ín *he spilled it*; it pət-ə́n *he stuck it on*; it wʊš-ə́n *he pulled it*; it kʷan-á·-təm *it was taken, held*; it cá·n-təm-x *he was told this*; it č'ə́l-təm *he was drowned*; it xʷí·l-təm *it was hung up.*

For all other forms, that is, non-completive, the continuative forms, nominalized by s- and with affixial changes are used: s-wʊš-tə́n *he is pulling it*; s-?yix̣-tən *he is picking it*; s-q'ə́x̣-atən *he is patching it*; s-?ə́pxʷ-tən *he is dropping it*; s-?é·kʷ-atən *he is fetching it.*

In the discussion of the pronominal systems of the Interior languages reference was made to the 'completive-customary' system, meaning that the two aspects have the same structure and pronouns. In Cheh there seem to be 'customary' suffixes, but the customary form (Boas' 'momentary'), which has the suffix -stom comparable with CA -stm- (Boas' 'Class III completive') has the subordinating form with s-nominalizer, and the continuative pronouns, and there are some forms without s-: s-c'a-mí·stwʊn *she mothers the child*; s-é·lən-stwap *your (pl.) feeding him*; s?á·y-enq-əm-stwʊn *he is tracking him*; sá·?-m-al-stawt *we are making it (belt).*

There is little doubt that these forms are comparable in Cheh and CA. Any of the meanings could be *customary*, but they are not so given and the possibility is only casually noted.

Still another suffix, -mit, is involved with the idea of customary action. This suffix stands after the nominal-locative suffix, and between -stm and the pronominal suffixes; it contracts in the same way as -šit *for, as a favor to.* From a large number of text examples it is quite certain that -mit means *resume an interrupted continual action*; when it is combined with -stom- it may mean *resume an interrupted habitual action*: s?éč-mit-ən *he is swimming*; s-mó·s-əmit-ən *he is sleeping.*

When the verb is subordinated the nominal form with possessive affixes may be used: ał tit s-ná·m-stawmš *when they finished, at they their-having-finished*; meł ta ən s-əx-ə́n *I did not see him, not past my seeing-him*; meł ta ən s-ə́x-ce *I did not see you, not past my seeing-you*; meł ta ən s-ə́x-təm *I was not seen, not past my being-seen*; tɬ'a s-é·k-ʊn-čɬ *we shall go after (bear); future our-going-after.*

On the other hand, the Cheh continuative has a distinctive set of object-subject affixes as we have seen. These are used with s-nominal and do not take possessive pronouns. No clue has been found to determine when one construction is used as opposed to the other.

S-D has the same differentiation of aspects as Cheh. Although there are various aspectual prefixes (independent particles?), the pronominal treatment seems to be the only distinction between completive and continuative. All subordinating forms are verbal nouns with s-, and the completive may be nominalized under certain conditions of subordination.

Tweddell notes some S-D stems like gwa? *own, possess*, and xatɬ' *want*, which seem always to have the nominal form with possessive prefixes.

In respect to s-nominal use of possessive pronouns and occurrence of object-subject suffixes with nominalized verb forms, the three Coast languages are in agreement, and are set off from the Interior languages here discussed.

The prefix S-D aco-, ʔəco- *customary*, is used with completive forms. Possibly the persistence of -co, which never seems to be weakened, accounts for the contracted forms of CA æc-, æ^{æ}-, a^{a}-.

CA has a customary frame æc-. . .-stm. The customary is treated like the completive with the same pronouns which vary some in this position.

Kal has a customary (Vogt's 'resultative') with a frame es-. . .-st, and is treated as in CA; it is essentially a modification of a completive.

The continuative of both CA and Kal is a verbal noun as in the Coast languages. The transitive continuative of CA and Kal is consistently of the type object-possessive-. . .-ing, and because some of the pronouns are prefixes that combine with other verbal prefixes, the forms differ greatly from those of the Coast. When such constructions occur in the Coast languages the possessives have the position and form of independent words.

Subordinate clauses with continuative forms are used for negative, intentional, cause, time, condition or doubt, relative, and other subordinations.

Here we should return to the discussion of the word. In both CA and Kal some nouns have an initial other than s; they contain stems which I consider as verbal. The paradigm given by Vogt (Kal §59) illustrates and corroborates this theory; the same structure is used in CA. Forms like Kal ku?-an-pɔx-út *I am your father*, have the form *me-your-fathering*, the construction being exactly the same as the transitive continuative with object, but without the phonetic obscuring of s-nominalizer.

A realization of this fact, together with patterns of contraction would have clarified Vogt's description of the relation between nouns and verbs, it would have shortened several of his descriptions, and eliminated 'irregular' forms.

6.3. The structure of Cheh and S-D explains to some extent why they do not have verbal prefixes; independent verbs indicate place, time, direction, and other ideas. Till has some development of prefixes. In CA and Kal many adverbial ideas of place and direction are expressed by prefixes. A comparative list follows:

about to definite places CA tk^{w}æł-; *after, behind* CA č-, Kal č-, Till daak, daag; *again, back* CA uł-, Kal eł, Till wu-, wa-; *among* CA ni?^{ı}-; *as far as* CA tu^{u}s-; *astraddle*, and *counting persons* CA tč-; *at a distance* Kal hu-; *belonging to* CA *v*l-, Kal uł (coll.); *beside, on to, close by* CA mæl?-, Kal məl?-(?); *each* CA gul?c-; *eater* CA (hii- *the one who*), Till iis-; *fellow, companion, of a kind* CA nuk^{w}-; *first* (*and then. . .*) CA ci^{i}-; *get, become, make* Till ya-, yał-; *go for* CA (cp. u-*just*), Till u-; *hither* CA čic-, Kal c-, Till č'it-(*be near*); *hither from there* CA čitæ-, Kal č'-(with nouns); *in, place* CA hın-, Kal n-, Till n-, nš-, (*at, to*); *just, merely* CA u-; *kin* Till ʒu-, š-; *offspring* CA č'it-; *old, worn* Till si-(. . .-win); *on and part of* CA t-; *on at a point, not a part of* CA č-; Till č-; *on broad surface* CA čæt-, Kal čł-, Till dæs-; *only* Till ʒi-, ʒa-; *on the way* CA tæp-; *one who. . .*CA syæ-, Kal sx^{w}-, Till sia-(*future*); *over* Till dał-; *owner* CA (cp. prep. æ-), Till as-; *past* Till na-; *plural* CA pał-(*boys*), guł-, Kal peł-(*women*), uł-(*group*), Till sus-; *preposition, general* CA æ-, Kal l-(?), Till a-, as-, is-; *sound of. . .*CA ıs-; *spouse* CA pæn?-; *thither, before* CA tæ-, Kal t-(*from speaker*), Till di-(*from*); *through* Till dał-; *toward* Till xuł-; *time for* Till han(s)-; *try, want* Till dæš-; *under, off* CA cæn-, Kal k'^{w}eł-, Till gaš; *under, almost touching* CA gul'-; *with, accompaniment* CA twæ-, Till wuł-.

The prefixes have not been classified because they are too varied in meaning. Most of them are locative and directional, some are nominal, some plural or collective; others are temporal. Till has a few that serve as auxiliary verb stems: dæc- *try, want*; ya-, yał- *become, get, make*; u- *go for*. Some elements that Edel lists as prefixes might be considered as particles, for example, ga *future*, na *past*, wuł *with*.

Kal and CA are comparable in the devel-

opment of prefixes; Till stands next, but with prefixes quite different in form and function. Comparison with Cheh and S-D must be with stems, a few of which are suggestive. Such a comparison is significant in that CA and Kal have some stems comparable with some of their own prefixes.

6.4. There are several categories of suffixes. Some have been called 'verbal suffixes' because they are so intimately related to the stem as sometimes to seem a part of it, and their position just after the stem shows their close relationship. Some of these have been called 'lexical suffixes' by Vogt who has a rather wide representation of suffixes in this category, including some like -luis *about to indefinite places*, -ist *spherical surface*, which have here been included among the largest suffix group and called 'nominal and locative' suffixes. Vogt calls them 'field' suffixes. In his class of 'lexical' suffixes he has included several pronominal forms such as -cut *reflexive*, and -tuwex^{w} *reciprocal*, which occupy a pronominal position. Another class is called 'causative.' Finally, Vogt has some forms left over which he subsumes under 'isolated' suffixes.

Since I think the categories can be better generalized than this, I am not changing my own terminology much, but I am combining my 'nominal' and 'locative' suffixes into a single class. We cannot determine that they are either one or the other; a so-called 'nominal' suffix often has a locative connotation, for instance, *arm* or *on the arm*, *house* or *in the house* are indistinguishable in form. Moreover, suffixes of this kind are often combined with a locative prefix. Is the prefix locative and the suffix nominal? Or are both locative, one signifying the other in greater detail?

One major purpose of bringing up the subject of suffix categories is to point out that the so-called verbal suffixes can be isolated and generalized, as I have previously shown (CA §§434–55), and as Vogt's material, though not his classification, corroborates to a great extent. These suffixes are sometimes comparable with auxiliary verbs, or may even be compounded stems.

The nominal-locative suffixes are a second large class, and the 'suffixes of reference' have already been treated as being closely related to the pronominal suffixes. It seems possible, therefore, to differentiate three kinds of suffixes: those related to the stem, those related to the pronouns, and the aspective suffixes.

6.4.1. The first category, verbal suffixes, is difficult to compare because they have had the least attention, and have usually not been translated. Since this is a problem which will help in the ultimate determination of the verb stem, all available information about these suffixes is given, even though the meanings and comparison are sometimes doubtful, and the information is in many cases scrappy. Often the meaning is given for CA, and sometimes it could not be ascertained at all.

acting as, for CA -æł, Till -æł; *artificially, unnaturally* CA, Kal, Till -s; *desire* CA -numt, Kal -(n)umt, Cheh -ano·m, S-D -dobot; *far off, dim, neglected* CA -igw, S-D -agw; *grow. . . , become. . .*CA -il'š, Kal-ilš, -uil'š, S-D -il; *in the act of. . . , become. . .* CA -iš, Kal -ilš, -alš -ulš, -uw'alš, Till -il, S-D -is; *in position, state, or act of. . .*CA, Kal -ut, Till -u; *little by little* Kal -šilš; *movement along* CA, Kal -ust; *succeed in. . .* CA, Kal -nun.

Meanings of most of the following suffixes are very doubtful, but are listed for possible convenience in future comparison:

attempt, try CA -in; *billowy* CA -iy', -æy', Till -ay; *cause* CA -im, Kal -am, -um, -əm, Till -wi, -wu; *direction, -ward* CA -il-; *directly at* CA -u?us; *habitual* CA -ul, -ul'; *in every way* CA -mæ?^{m}; *instrumental, use* CA, Kal -min, Till -ən, -n, Cheh -min; *motion in u-curve* CA -ilš; *opposed to* CA -astq, -stq; *pendent*(?) CA -u?^{u}; *possibility, -able* CA -ut; *pretend, play at* CA -iyæ?^{m}, Till -ayu, -ai; *pretend, seem, feint at. . .*CA -ič; *resume interrupted act* Cheh -mit; *use, be for use* CA -it; *willingly* CA -ix^{w}; Kal -x^{w}(*accept*).

It seems that CA -l'š *grow, become...*, and -iš *be in the act of...*, are reduced to a single suffix in Kal -ilš, -lš with a vowel determined by the phonetic character of what precedes. The interpretation that a reduplicated final consonant indicates a state rather than an act seems reasonable in view of the forms łq'-ilš *he lay down*, łáq-šilš *he sat down*, and łq'-al-ilš *they lay down*, which Vogt regards as 'entirely irregular.' łq'-al-ilš *they lay down*, doubtless refers to the act of lying, and therefore the suffix is reduplicated, whereas in laq-q, the sense is *they have come to a state of sitting*. Both łaq' *they lie*, and łaq *they sit*, are plural stems so that reduplication is not necessary for pluralizing. However, the suffix -ilš is so closely related to the stem that it is reduplicated to indicate repeated action.

In contrast to CA -iš, Kal -ilš *be in the act of*, is CA -ut *be in the position of*, which may be used with some of the same stems in both languages, for example, CA æm, Kal em *one sits*. Corresponding with -ut, Till has -u.

The suffix -in that follows the stem is to be differentiated from -ən-transitive which immediately precedes the pronominal suffixes. This distinction can be detected only if the complex has the nominal-locative suffixes, or if -ən is repeated. In CA it has been interpreted as *attempt, try*. A few examples are: hın-tv-twgw-ín'-čn'-cən' *I failed to keep up with you from the start, I-attempted-to-reach-you-at-the-back*; t-mʊxʷ-mʊxʷ-un'-m'ın'-c *he made fun of him, he-used-him-for-trying-to laugh at* (repetitive for an interval of time); šet'-ət'-æᵉn-ún-c (< šət'-ət-æn-nun-c) *he beat him in a contest; he-succeeded-in-trying-to-win-from-him*; šǽn-ən-əm-stus *he employs him, he-tries-to-cause-him-to-work*; čıtæ-n-łaχʷ-łaχʷ-ín-kæ?-æn-tp *if you* (pl.) *try to shoot it with speed into the water*.

In the last example the position of -in *try*, after the stem łaχʷ *shoot with speed*, demonstrates the difference between -in *try* and -ən-*transitive*.

There is no doubt that the two suffixes, in the same relative positions, exist in Kal, but only a few examples seem to fit the interpretation *try, attempt* for the verbal suffix. Perhaps this seems true because the primary meaning of the stem is not apparent. In the following the interpretation may fit: čł-xʷép-ən-ən' *I spread it over him, I-tried-to-cover-him* (?); yes-čł-xʷép-ən-ə?m̓ *I am spreading it over him* (cp. xʷép-əle?xʷ-ən *I spread it on the ground*); čin-čł-xʷp-ən-ən'tsút *I covered myself*; yesə-n-cc-in-íčin'-əm (cc < čic *near*) *I am catching up with them; I-am-trying-to-arrive-back-of-them.*

The following are examples in which the use of -ən is not clear: kʷ'əł-łq-alš-ən-étkʷ-ən *I sat down below him on the shore* (cp. činesə-n-łq-alš-étkʷ *I am sitting down in the water*); čł-xʷs-ən-én' *I disturbed his sleep, I wakened him*; čł-?emt-én-ən' *I sat on him*; čin-uš-uš-ən-éčst *I have long fingers* (wis > uš *long*).

It will be noted that in all but the last example there is a locative prefix. Possibly the prefix with -en (-ən) forms a frame, but the combination may be only accidental.

One of the most difficult suffixes to interpret is -im (-æm, -əm), as I have previously pointed out (CA §871). It seems sometimes to be a causative, in which case it occupies a position immediately after the stem. But unless the compound is long and contains a nominal or locative suffix, it can hardly be differentiated from -əm, in Kal sometimes -ím *continuative*, or -əm which may be thematic or an indefinite object. In the continuative Kal sometimes has -əm-əm, a form which has two functions, possibly -əm *causative* and - əm *continuative*. I do not find good evidence that -əm is pronominal in CA or Kal.

For CA I have the following meanings, several of which may be related:

-im (-æm, -əm) immediately following the stem, *try, attempt, make an effort*; this of course may be causative.

-əm with final stem reduplication, *become*

voluntarily, which may also be interpreted as causative.

-əm *continuative passive.*

The last two are distinguished by their final position; they always follow the nominal suffixes.

In Kal -ím (-əm, -m, -úm, ɔm) following the nominal suffix is used in the completive as well as in the continuative, showing that it has two distinct functions and meanings. Compare the following forms in which the completive precedes the continuative: aímt-əm-ən *I was angry at him*, yes-aímt-əm-m *I was cont. angry at him*; pitáxʷ-əm-ən *I spat it out*, yes-pitáxʷ-əm-m *I am spitting on him*; súxʷ-əm-en *I measured it*, yes-súxʷ-əm-eʔm *I am measuring it*; qʷa·-m-stén *I made him move over* (qʷ'a *glide, move*), yes-qʷ'a·-m-ím *I am making him move over*; čin-tk'-úm *I made a bet, laid it down*, čin-es-tk'-əm-í *I am making a bet*; x̣s-áqs-əm-ən *I found the food good*, yes-x̣s-áqs-əm-m *I am finding the food good*; n-xés-éls-əm-ən *I was pleased about it*, yesə-n-x̣eʔs-éls-əm-m *I am cont. pleased about it*; čɬ-tkʷ-kʷ'-élp-əm-ən *I put up the tent*, yes-tkʷ-kʷ'-élp-əm-m *I am putting up the tent.*

The instrumental -mín(-mən) follows the stem and precedes the nominal or pronominal suffix, whereas -əm, which may appear as a compound -əmən, may be difficult to distinguish from -mín or -mən, follows the nominal or pronominal suffix: es-qʷ'əltə-mən-uweʔxʷ-i *they are carrying each other* (qʷ'əlt *carry on back*; -[t]uwéxʷ *each other*; -i cont.).

The following examples show the use of -mín and -əm in the same complex: es-č-x̣ʷa-x̣ʷeʔeyə-mín-əm-s *they are laughing at him, they-are-using-him-for-laughing*; yes-cq'-a-mín-əm *I am throwing it*; yesə-n-cq'-a-mən-cín-əm-m *I am throwing it into his mouth*; yesə-n-cq'-a-mən-étk-um *I am throwing it into the water*; yes-č-cq'-a-mən-čən-élx-um *I am throwing it out of the house.*

Still another Kal combination is -əm-íst, which seems to refer to the entire body. We shall see (below) that -ist is interpreted as *surface of a round object* in CA and Kal, but Vogt points out that -emíst is an extended form, and in view of Cheh -na·m-ac *body*, perhaps we should interpret -míst or -əmíst as a compound suffix, in which case -əm is still unaccounted for. Or possibly, -əmíst is a single suffix meaning something like *entirely, entire body*: es-tɔq'-əmí(st) *it is falling, breaking off*; n-tɔq'-tku-míst *they went down into the water* (tɔq', tuw'aq *break, fall off*); čin-esə-n-ɔ́ɔs-əmiʔst-i *I am going under, sinking* (ɔɔs *lose, disappear*); čin-es-iíʔu-mist-i *I am shaking* (iiʔuʔ *move, shake*); yíʔu-m-sten *I am moving, shaking it.*

These examples have been cited, not because the differentiation is clear, but rather to emphasize the problems of the several suffixes in the various languages. CA and Kal have been discussed first because the examples are best known in these languages, and -in in various languages shows certain relations with the Coast languages.

In Till -win (-ən) seems to correspond with CA, Kal -min. As in the languages so far discussed, one -ən, -n occurs immediately after the stem, and at least one, possibly several, suffixes of the same form stand after the nominal suffixes: nš-yuɬ-ín-i *I paint it*; yiɬ-n-iuš *he is next to me*; s-tæč-an-sʊ́t-i *I mixed it with it*; gaš-yæl-ʊ́n-sʊ́-t-i *I wrap it around him* (gaš-*under*; yæl *twist*); a c-k'æw-in-ɔ́cs-u *they use their noses for cutting* (k'æw *cut, split*; -včs *nose*); da c-qax-ʊn-wáɬɬ *he made someone cry*; hán̓s-ʔá-ah-an-áɬɬ *lullaby, time for singing to child*; da ši-šəg-ut-ún-aɬtxʷ *tent.*

In these and other examples the common element seems to be -n *with it, on account of, because of it*, I therefore compare -ən, -n with Interior -min. Since Till w > Cheh, CA, Kal m, S-D b, the suffix is probably -win, but since w assimilates to so many sounds, the full form rarely appears.

The difficulties encountered for Interior -əm after nominal suffixes are apparent in Till in several over-lapping forms: -wi, -wu *cause*, or *transitive*, -win *the one who, the place where*; the conjugational suffix -iw. Since

these sometimes are preceded or followed by vowels, the separation of the suffixes is doubtful.

There is reason to believe that Cheh has a continuative suffix -an, -ən, -n which would correspond with CA and Kal -əm of the continuative. Boas has -əm as a Cheh conjugational suffix, probably corresponding with Till -iw, but he also has -əm-ɬ as a suffix denoting *something, someone*, an indefinite object with an intransitive form -ɬ, or perhaps -əmɬ is the suffix and ɬ is not related to ɬ *intransitive*. The form -əmɬ as a final, or preceding a consonant, may become -əmal- when it is intervocalic, and seems to form a conjugation in all persons. Forms like the following cause doubt about its interpretation as an indefinite pronoun: s?ə́č'-əmal-ač'a *swimmer*; səp'-ə́mɬ-twʊn *he struck with it*; sá·?-malən *he made them* (*wedge* and *hammer*); q^{w}'e·tɬ-malən *he cut it* (*stick*); əx-ə́mɬ-stw-ənš *I am coming with it*.

Compare the following examples: sa·wl-amin-a·nš *I ask you*; eɬ-á·no·m *by eating, by means of eating*; taš aɬ tən s-mélq-ano·mš *on account of my forgetting* (Boas isolates -ano·m as an instrumental); k^{w}áx^{w}-mi-sən *he arrived for a purpose*; k^{w}á·x-ʊmis-ilte *they arrived at bear* (*having gone for it*).

The frequency of S-D -ib, -ab, -ub, -əb must point to similar problems in these languages also: tu?əx^{w} lab -ədub-əb *he wants very much to see it* (cp. tu?əx^{w} lab-ədub *he wanted to see it*); tu ?ex^{w} toq-ob-eb-čiɬ *we wanted to laugh*; u ?əx^{w} k'lal-əb-əc-əb-əb-əx^{w} *he wants to put his clothes on now*; cay-əx^{w}-čəd u-xɔ?-il šəšəb-ab-adx^{w} *I became very poor*.

6.4.2. A large class of suffixes has been termed nominal, but many which behave in the same way are locative, and indeed, even the nominal suffixes are sometimes used in a locative sense. A suffix like *arm*, for instance, may be a subject or object of an English construction, but without modification it may mean something like *on the arm*. This class of suffixes was early recognized as characteristic of Salish, and many suffixes have been recorded for many languages besides those here under consideration. The suffixes of these five languages are here listed in English alphabetical order:

about to indefinite places CA -ælwis, Kal -elis, -úelis, -əlis, (*try*), Till -aləwis (*face*); *alongside, beside* CA -ælniw', Kal -ɬne?ut, Till -asnægyu; *arm* CA -aχən, Kal -aχən, Till -æči, -a·či, -ača, -ač, -il(?), Cheh -axan (*shoulder*); *angle* CA -il; *around* S-D -agw; *attachment* CA -iplæ?^{m}, S-D -layad (*ear, handle*).

back, spine CA -ičn', Kal -ičən, Till -i·čən, Cheh -ičən, S-D -ič, -wič; *back and forth* CA -yuyæ?^{m}; *band, family* Kal -aq^{w}su; *between, astride, together, in contact* CA -iw'æs, Kal -e?us, -eus, Till -gas; *billowy* CA -iy (-æy), Till -ay, Cheh -ay, S-D -ay (*pine*); *body* CA -num', Cheh -na·mc, -na·m-ac; *bottom, rump, seat, buttocks, foot, base* CA -ip, -p, Kal -ap, -əp, -ep, Till -uh, -ah, -aha, Cheh -əp, S-D -ap, -əp, -p; *breast, chest* CA -aqs, Kal -ax^{w}čˇ, Till -aɬaɬ, Cheh -ax^{w}c; *breath* CA -aɬqix^{w}, Till -aɬqx, -asči; *bush, plant* -æɬp, Till -ai, -i.

camas CA -tχ^{w}æ?^{m}; *cattle, horse* CA -asčíčæ?^{m}, Kal -sqaχe'; *cavity, closed*; *abdomen, room* CA -inč, Kal -enč, Till -anč, -anvč, Cheh -nč (*hip, hind part*); *cavity, open*; *vessel, canoe, wagon* CA -gwil, Kal -eul, Till -ækɬ, -gi·l (*length*); *child, offspring, young* CA -ilt, Kal -elt, -il't, Till -alt, -alvɬ, -ælal, -aɬal, Cheh -iɬ; *clothes* CA -al'qs, Kal -alqs, -lqs, Till -alis; *color* Till -æls, -æɬ; *contest, game* Kal -aɬq; *corner* Till -ana; *cover, hide, skin* CA -ilx^{w}, Kal -elx^{w}, S-D -alix^{w}, -lix^{w} (*letter*).

day, sky, time CA -(a)sq'ıt, Kal -(a)sq'at, Till -yis, iis (in counting); *dried food, grease* Till -iɬ, -uɬ.

ear; *on surface* CA -inæ?^{m}, Kal -ené, Till -ani, Cheh -an'; *edge, mouth, shore* CA -cin, Kal -cin', Till -ʒin, Cheh -ɬənɬ, -ɬna·li, -ln-ač, S-D -cid, -cəd; *effort* CA -idən; *end, road* CA -alqs, Kal -aɬq; *eye, face, fire*, (*hole through which light shines*) CA -us, Kal -us, -s, Till -ais, -æis, -us, -as, -is, Cheh -os, -a·lis, S-D -os (*neck*).

fathom Till -asχa; *feeling* CA -alp, Kal -šlp; *fire, fuel* CA -kvp, Kal -šič, Cheh stq, -staq;

fish CA -isgwæl; *food* CA -ilən, Cheh -iłən; *foot* CA -šin, Kal -šin, -šən, Till -ša·n, -šun, -šən, Cheh -šən, S-D -šəd; *forehead* CA -il'kʷæʔᵊᵐ, Kal -ús-us, Till -als, Cheh -a·is; *foundation* CA -ilup.

genitals, female Till -niga; *ground, land, earth* CA -ulʔʊmxʷ, Kal -uléxʷ, Cheh -a·itəmš.

hand, entire CA -ičs, Kal -ečst, Till -ančs, Cheh -ač'a, -ačs, S-D -əči, -či; *hand, finger* CA -ičt, Till -ači, -æči; *head, hair, top, tip* CA -qin, Kal -qin, -qən, Till -qan, -qun, -qən, S-D -q'əd; *heart, mind, stomach* CA -ilgwæs, Kal -e(ls), -elis, Till -aligas, Cheh -ino·t, -e·nwat, -e·naw, -i·not; *hillside* Till -aχ-ac; *horn, hairline, forehead* CA -isčən, -ilsčən, -ælsčən, Cheh -a·is, -als, -lis, S-D -ač, -əč; *house* CA -iłxʷ, -łxʷ, Kal -ełxʷ, -əłxʷ, Till -ałtxʷ, Cheh -a·łxc, -a·łxʷ, -altxʷ, -š·łxš.

inside, from within CA -ił, Kal -uł, Till -as (?); *inside surface, meat, flesh, game* CA -ił-c'æʔᵊᵐ, Kal -eł-c'é.

kind, sort Kal -aqsən.

language Till -ał, -u; *long, stiff object* CA -alqʷ, -alq, Kal -alqʷ, Till -alag, -alıč, Cheh -e·q (*leg*), -əlq (*penis*), -awq, -vq' (*tall*).

neck, entire CA -æps, Till -ahs, Cheh -ps, S-D -əps, -ps; *neck, outside, back of* CA -ilps (*mane, person's throat*), *nose, beak, point* CA -iʔˈqs, Kal -aqs, qs, Till -ačs, -aqs, Cheh -iqs, -aqs, -qs, S-D -ks.

*opposed to. . .*CA -astq, -stq; *oral cavity, mouth inside* -alpqʷ; *outside, in the open* S-D -alb.

people CA -əmš, Kal -łtumš, Till -wiš, -wəš, Cheh -a·mš, -mš, S-D -abš, -talbixʷ; *person* CA -ilumxʷ, Kal -s-qelixʷ, Till -win; *pharynx* CA -isč'ay't; *place* Till -wuš, uš, S-D -adi; *property* CA -ilgwæs.

relative Till -un; *resemblance* Till -æls, Cheh -axan.

shoulder CA -ałq'iw't, Kal -łq'eʔˈıt; *something* CA -ingwilən; *supernatural* Cheh -kvlš; *surface, inside, from inside out, all through inside* CA -ic'æʔᵊᵐ, -c'æʔᵊᵐ, Kal -ic'é, Till -ic'a, æcu, -ica, Cheh -ac, S-D -ac; *surface of round object* CA -iʔˈst, Kal -i(st), Till -als, Cheh -als, S-D -als, -li·s, -əlis, (*head*).

tail, anal region CA -ups, Kal -ups (-ú), Till -uh, -ah, -aha, Cheh -yilps; *taste like* Till -ałqx; *tongue* CA -ipłtixʷčč; *tooth* CA -ins, Kal -eis, Till -a·ns, S-D -is.

vegetation, crop CA -stq, Cheh -staq, -stq, (*fire*); *voice* CA -qin, Cheh -aq, -q'.

water, liquid CA -itkʷæʔᵊᵐ, Kal -atkʷ, -štkʷ, -ułkʷ, -kʷ, Till -ais, -ałq, Cheh -(e)łči; *weather* CA -inxʷ, -ænxʷ, Kal -eis; *woman* Cheh -łən, -išlən.

The stable suffixes (ascertained for at least three of the languages) are: *arm, back, bottom, breast, cavity* (*enclosed*), *belly, room, stomach*; *child* (*young*); *ear*; *edge* (*mouth, shore*); *eye* (*face, opening*); *foot*; *ground* (*land, earth*); *hand* (*entire*); *head* (*hair, top*); *house*; *long stiff object*; *neck*; *nose*; *people*; *person*; *surface* (*inside*); *surface of round object*; *tail* (*anal region*); *tooth*; *water* (*liquid*).

It is expected that there would be some differences of meaning and application of these suffixes, although on the whole they are quite comparable.

In other cases, although comparable forms seem likely, there are doubts, and these will be discussed one by one, since a major reason for comparison is to establish uncertain forms.

CA -ælwis (-ælwıs, -æl'w'ıs) *movement about, here and there in indefinite places,* is probably the clue to Vogt's -luis which he explains as 'iteration'; all his examples—*try, drive about, shoot* (*at random*), *walk about*—seem to fit the CA interpretation. I suggest that some examples Vogt places under -elis should go here, making the forms -elis, -əlis, -luis (cp. also Kal p. 174 xui *go*): n-sp'-é?lis-ən *I beat them thoroughly*; *I-hit-them-here-and-there*; esə-nίč'-əlis-əm *he is all cut to pieces*; *he-is-being-cut-here-and-there.*

Examples like *attachment, handle*; *end road, race, contest,* are given as suggestive—the relationship, if any, is remote.

Examples like CA -ælniw' in position alongside, and Kal -łnί'ut *alongside*; CA -num and Cheh -na·mc *body*, and others, illustrate close relationships between two of the languages; probably such suffixes exist in others as well.

CA -iw'æs (-æw'æs, -w'æs) *between, to-*

gether, in contact, perhaps 'mutually or reciprocally affecting' is interesting in several respects: the meaning often suggests a reciprocal. CA -iw'æs explains Kal -eus (-e?us), examples and usage of which correspond closely with CA forms. Both should be compared with Kal -uwe(xʷ), -uwe?xʷ, which Vogt interprets as a reciprocal. It will be noticed, however, that all Vogt's examples under -uwɛxʷ contain the element -tuw- which has been explained as a reciprocal pronoun. His example q'ɔmən-uw-éxʷ *they wrestled*, is probably from q'ɔmən-tuw-éxʷ (n-t > n).

The Kal example, χamentš-e?us *they love each other*, has the suffix -e?us *between*, indicating *there is love between*. However, the suffix of χaməntš-é?lis *they love one another* is probably the plural form of -elis *here and there*.

The Interior languages and Till have two suffixes for *cavity*, one of which -inč *closed cavity, abdomen, belly*, is found also in Cheh as *hip, hind part*. Incidentally, this suffix has become thematic with Kal χam-ənč and CA χæm-inč *love*.

CA -gwil and Kal -eul, -e?uł refer to *an open hollow* or *cavity—vessel, wagon, dugout canoe*—but actually both are used for *abdomen, belly*. In Kal -eul, -e?uł is used for names of animals—*fish, loon, game animals*—and for manufactured articles.

CA -ilgwæs (-ælgwæs) *heart, stomach, mind*, corresponds with Kal -els, -elis, -uəlis. In both languages it is used to express feelings and state of mind, for the stomach is the seat of the emotions. The Cheh -eˑnawt, -inoˑt *mind*, is certainly comparable.

CA -ičs *entire hand*, comparable with Kal -ečts *hand, finger, manual labor*, is differentiated from -ičt *hand, fingers* (*digit part of hand*). Cheh has -ača, and S-D -eči, -či, but it is not quite clear if in these languages there are one or two suffixes.

CA -isčən, -il-sčən *horn, hairline*, seems to correspond with Till -als, and Cheh -aˑis *forehead*, possibly related to -als, -lis *head*, and -alis *eye*, and S-D -ač, -əč *hair, brow, head*.

CA -iɬ *all through, radiating from the inside*, is usually compounded with other suffixes. When meaning *flesh, meat, game*, the compound is -iɬ-c'æ?ᵉ. This should be compared with Kal -elc'e?, -ełc'e? *all over inside, meat, game*. Vogt observes that there may be confusion about the meanings. Since the explanation for CA is exactly the same as that for Kal it seems likely that there is no confusion. The suffix differentiates the fleshy part of the body from the cavities and bones, but it is extended in meaning to include space, as are -inč and -ilgwæs in the Kal examples: n-aˑc-éłc'e?-is *she tied it* (*perhaps meat*) *up in a bundle*; n-łq'-ɔt-e łc'e? *she lay in the room*; n-xʷst-éłc'e? *he walked in the room*. Since in CA -iɬ is one of a combination of suffixes other than -c'æ?ᵉ *entire surface*—kʊp *fire*, -šən *leg*, -kʷæ?ᵉ *water*—it seems likely that Kal -iɬ is also a suffix in its own right. Possibly Kal -uɬ is the corresponding suffix, or the same one. Vogt interprets it as *one inclined to*, but in all his examples it follows a labialized sound: xʷi-xʷey'-uɬ *game animals*; ?us-ú?-uɬ *loon* (us *dive*); suwé?-uɬ *fish*. CA -iɬ is probably comparable with Till -ałał *breast, chest*.

CA -æps *entire neck*, was differentiated from -ilps *back of animal's neck, mane, person's throat*; Kal has -ilps. -æps seems to be more general in other languages.

The suffix -c'æ?ᵉ, -ic'æ?ᵉ *entire surface*, has been discussed in connection with -iɬ. It seems to be general; Vogt has -ic'e? *all around*, as well as -elc'e? *all over inside*.

It is to be distinguished from CA -i?ˈst *surface of sphere*, for which Kal has a form -i(st), hardly differentiated in meaning from -ic'æ?ᵉ. I discussed the possible correspondence of -i?ˈst with Coast forms like -alst (CA §586), and Till, Cheh -als, -lis *head*, seem to corroborate the conclusion.

The connection between CA -stq *vegetation* and Cheh -stq *fire, fuel*, does not seem too remote in view of the fact that the forms are identical, and that fuel was wood.

CA -qin *voice*, identical with -qin *head*, has always been puzzling, and there was a

question as to whether it should have been so isolated. The Cheh forms -aq, -q' *voice*, seem to corroborate -qin as a CA homonym, even though the examples are few.

Suffixes in Kal are compounded in the same way as in CA, many combinations being literal. Suffix combination in Till is less frequent, but when it occurs the process is the same, the selection of suffixes is different. Compare: CA s-cæn-č'əm-cín-šən *ankle* (*under-edge-of-foot*), Kal s-kʷ'eɬ-č'əm-cín-šən *ankle*; CA hın-laɾʷ-íčt-ætkʷæʔᵐ *he stuck his hand into the water*, Kal n-lɔ·-čst-étkum *he stuck his finger into the water*; CA cin-kʷæʔᵐ *shore* (*edge-of-water*), Kal -cən-etkʷ *shore*) (*edge-of-water*), mq'anč-étkʷ *he quenched his thirst* (*drank-stomach-water*); CA -ip-šən *heel* (*bottom-of-foot*), Kal -ep-šən *heel* (*bottom-of-foot*); CA -alq-šən *long bones of leg*, Kal -aqs-šən *leg*; CA -ap-qən *occiput* (*back-of-head*), Kal -ap-qən *occiput, head*; CA č'ən'p'-qín'-čt *finger ring* (*clasp-tip-of-finger*), s-šíʔˈt'-emæš-qən'-čt *middle finger* (*first-in-order-tip-of-finger*), Kal -qin-čst *fingernail* (*tip-of-finger*); CA ın-č'am-q-íɬxʷ *on the roof* (*on-top-of-house*), Kal n-č'əm-qan-é (ɬxʷ) *roof* (*on-top-of-house*); CA Rac-Rac-qín'-cən *garters* (*tie-top-of-leg*), Kal lxup-qín'-šən *he hurt his knee* (*he-hurt-top-of-leg*), s-táʔu-čst-qi(n) *little finger* (*short-hand-tip*); CA -ip-w'as-šən *privates* (*bottom-between-legs*), Kal -ep-eʔus-šən *bottom-between the legs*, n-č'əm-p-étxʷ *back of tipi*; CA -ɔs-aχən *top of arm* (*orifice-of-arm*), Kal n-aʔix-uʔs-áxən-əm *he has it* (*bandoleer*) *over his shoulder*.

A few Till examples are: nəʔ-u·ʒin-əhačaas *wrist, bottom-edge-of-arm*; nəʔ-u·ʒi·n-áhšən *heel, bottom-of-edge-foot*; suc'-in-əha-či *little finger, ʔ-bottom-of-hand*.

The position of nominal-locative suffixes in relation to the meaning is not quite clear, but it is obvious that position makes a difference in emphasis.

THE KIOWA VERB PREFIX

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0. Introduction
1. Predication referents and person-number categories
2. Prefix analysis

0. Introduction. Previous articles[1] on the Kiowa language have limited themselves to the mere mention of, or at most, to but a partial listing of the long and involved series of prefixes which occur with the verbs. These prefixes are extremely complex, in that one prefix may signal simultaneously two or even all three of the referents of a Kiowa predication—referents here termed AGENT, TOPIC, and OBJECT—by identifying each referent as to number and person. For example the prefix mą́n-[2] in the verb mą́n-hɔ̀·gyà *you-two-for-them-them-got*, i.e. you two got them (things) for them (people), signals second person dual agent, third person plural topic, and third person basic plural object.

In this article[3] I wish to analyze these prefixes as complex, tightly knit clusters of a limited number of morphemes which combine in a very intricate but systematic way, and to present a complete analyzed listing of all pronominal verb prefixes.

1. Predication referents and person-number categories. Before the prefixes themselves may be adequately discussed, it is first necessary to discuss the predication referents and the person-number categories. Distinct sets of person-number categories for each refer-

[1] John P. Harrington, Vocabulary of the Kiowa Language (BAE-B 84, 1928); Parker McKenzie and John P. Harrington, Popular Account of the Kiowa Language (University of New Mexico Press, 1948); Edith E. Crowell, A Preliminary Report on Kiowa Structure, IJAL 15.163–67 (1949); William L. Wonderly, Lorna Gibson and Paul L. Kirk, Number in Kiowa, IJAL 20.1–7 (1954); Eva Sivertsen, Pitch Problems in Kiowa, IJAL 22.117–130 (1956).

[2] This article employs the following phonemic analysis:

The consonants are: voiceless unaspirated stops /p t k/, voiceless aspirated stops /pʰ tʰ kʰ/, glottalized stops /pˀ tˀ kˀ/, voiced stops /b d g/, affricates /c cˀ/, fricatives /s z h/, nasals /m n/, lateral /l/, and semivowel /y/.

The vowels are: /i e a ɔ o u/.

The suprasegmental phonemes are: nasalization of vowels /ˌ/, length of vowels /ˑ/, and tones high /ˊ/ and low /ˋ/. I have chosen not to write high-low tone glide /ˆ/ as set up by Sivertsen (op. cit.) because within my corpus it has a predictable occurrence, appearing to be a high tone on a long syllable ending in /Vˑ, Vl, Vn, or Vm/.

The phone [æ] is restricted in its distribution to occur after /y/ and can be considered an allophone of either /e/ or /a/, since neither of these occur unnasalized in this environment. Wonderly, Gibson, and Kirk interpret it as an allophone of /e/ but Sivertsen interprets it as /a/. In this analysis of the verb prefixes it is morphophonemically more convenient to consider [æ] an allophone of /a/ than of /e/. For example, in the following prefixes, the phone [a] is a morph indicating plural object: [mą́n-], [bat-], [mą́n-ˋ], [bát-ˋ], [yą́n-], [yą́-], and [ą́n-]; compare also those prefixes in which the phone [æ] is the morph indicating plural object: [gyǽˑ-ˋ], [gyǽˑ-], gyǽt-], and [gyæ̀t-].

[3] The data for this paper were collected at the Summer Institute of Linguistics on the campus of the University of Oklahoma during the summers of 1954 and 1956. Since Kiowa has served as a laboratory language for the advanced course of the Summer Institute of Linguistics since 1950, many student and staff hours have been spent in amassing Kiowa data and in carrying forward its analysis. This paper builds, then, to a considerable degree on the foundation provided by my colleagues and predecessors in the study of Kiowa. However, the particular segmentation and analysis of the prefixes here presented is mine. I am especially grateful to R. E. Longacre for the many helpful criticisms and suggestions which have contributed much to the actual writing of this paper. Although a number of informants have provided much data over the years, the data as it is presented here has been checked with Mr. Charles Redbird of Hobart, Oklahoma.

ent[4] may be deduced by comparing various possible translations of each prefix-verb combination occurring in the paradigm of a given verb. These highly intricate person-number categories are summarized and illustrated below along with further elucidation of the import and function of the predication referents themselves.

1.1. The agent is translated as a subject in a free English translation and may fall into any of eight categories: first person singular (1s),[5] second singular (2s), third singular (3s) [one basic[6] singular third person], second dual (2d) [two second persons or one second person and one third person], second plural (2p) [three or more persons, at least one second person always being signalled, and any combination of first, second, and third persons also being signalled; or only two persons —one second person and one first person[7]], third dual (3d) [two third persons], third plural[8] (3p) [three or more third persons or the first person and one or more third persons], and indefinite person (ind) [any three or more persons spoken of in an indefinite way and often referred to merely by the demonstrative óygò].

1.2. If there is no Kiowa object, the topic is translated as an English direct object; but if a Kiowa object occurs, the topic is translated either as an English indirect object or as the possessor of the object. The topic may fall into any of eight categories of which 1s, 2s, 3s, 2d, and 3d, are the same as the equivalent categories for the agent. The remaining categories differ in certain respects from the equivalent categories for the agent and may be described as follows: second plural (2p) [three or more second persons or any combination of second or third persons with three persons as a minimum], third plural[8] (3p) [three or more third persons], and first plural (1p) [two or more persons always signalling the first person and any combination of second and/or third persons].

The differences between the categories of agent and of topic may be illustrated by two frames. In frame A all items are kept constant except the agent. In frame B all items are kept constant except the topic. Only the Kiowa verb with its prefix is given since the presence or absence of further context does not affect the selection of the prefix.

Frame A

(1s)	gyà-góp	*I hit him*
(2s)	à-góp	*you hit him*
(3s)	góp	*she hit him*
(2d)	mą́-gòp	*you two hit him*
		you and your brother hit him
(3d)	ę́-gòp	*they two hit him*
(2p)	bą́-gòp	*you all hit him*
		you and your brothers hit him
		you, she, and I hit him
		you two and I hit him
		you and I hit him
(3p)	ǿ-gòp	*she and I hit him*
		we all (excl) hit him
		they all hit him
(ind)	á-gòp	*someone hit him*

[4] These referents may occur in the linguistic context or only in the context of situation. For example, in the utterance ám nę́· báò gyà-ǫ́ *you I cat I-to-you-it-gave*, any or all of the first three words (ám nę́· báò *you I cat*) may be omitted in that these items are only used to avoid ambiguity or for emphasis.

[5] The categories are described according to the following definitions: (1) the first person is the person speaking, (2) the second person is any number of persons spoken to, and (3) the third person is any number of persons spoken about.

[6] The terms basic and inverse are technical terms used by Wonderly, Gibson, and Kirk to describe the noun classifications of Kiowa. A noun is analyzed as being in its basic form or in its inverse form according to distribution with the suffix {-gò}.

[7] This person-number category could be described as non-third non-singular. However, the less accurate but more concise term second plural is used in this paper.

[8] Only class one nouns may occur as agent or topic of a Kiowa verb. Since class one nouns are basic dual/singular, they occur in their inverse form when signalling three or more. Therefore any plural third person agent or topic is inverse in number.

Frame B

(1s)	ę́-góp	*he hit me*
(2s)	gɔ̀-góp	*he hit you*
(3s)	góp	*he hit her*
(2d)	mń̨-góp	*he hit you two*
		he hit you and your brother
(3d)	ę̀-góp	*he hit them two*
(2p)	bɔ̀-góp	*he hit you all*
		he hit you and your brothers
(1p)	dɔ́-góp	*he hit you, her, and me*
		he hit you two and me
		he hit you and me
		he hit her and me
		he hit us all (excl)
(3p)	é-góp	*he hit them all*
(ppr)[9]	ę̀m-góp	*he hit someone*

1.3. The object is translated into English as a direct object and may fall into any of four categories: basic singular (s), dual (d), basic plural (p), and inverse number (i). These categories are chosen according to the number-class of the noun occurring as the object in the linguistic context or implied as such in the context of situation. That is, a class I noun which has a basic implicit number-category of dual/singular selects, when it occurs as a dual or singular object, a prefix on the verb with which it occurs that indicates dual or singular object respectively; however, when it occurs as a plural object it selects a prefix on the verb that indicates inverse number object. For example, in the forms cited below, báò *cat* is a class I noun (bsc. du/sg, with -gɔ̀ suffix for inverse number) and selects a verb prefix (dé- in the example below) which signals an inverse object when plural; á· *sticks* is a class II noun (bsc. du/pl, with -dɔ̀ suffix for inverse number) and selects a verb prefix (dé- in the example below) which signals an inverse object when singular; but c?ó *stone* is a class IV[a] noun (bsc. du/sg/pl) and therefore never selects a prefix which marks inverse object. This is illustrated by the following nine expressions: báò gyà-hɔ́·gyà *I got a cat*; báò nę̀n-hɔ́·gyà *I got two cats*; báò-gɔ̀ dé-hɔ́·gyà *I got three (or more) cats*; á·-dɔ̀ dé-hɔ́·gyà *I got a stick*; á· nę̀n-hɔ́·gyà *I got two sticks*; á· gyàt-hɔ́·gyà *I got three (or more) sticks*; c?ó gyà-hɔ́·gyà *I got a stone*; c?ó nę̀n-hɔ́·gyà *I got two stones*; c?ó gyàt-hɔ́-gyà *I got three (or more) stones*.

2. Prefix Analysis. In examining the prefix series it is soon evident that there are many formal similarities among various prefixes—similarities striking enough to cause us to suspect that the prefixes contain more than one morpheme. Nevertheless, in that these component morphemes are tightly fused and interlaced with each other, no one analysis of them will possibly ever be definitive and various 'exceptions' must be allowed to whatever analysis is formulated (see fn. 11, 13, and 17). Furthermore, as a result of this fusion a prefix tends to acquire a hypermorphemic meaning that is greater than the meaning of the sum of the meanings of the constituent morphemes. The particular analysis here proposed segments and analyzes these prefixes as several morphemes clustering about a core morpheme and signalling the variety of person-number categories of the predication referents as described above.

2.1. That which each morpheme signals is very complex in that the meaning of one morpheme may be modified, shifted, or at times even cancelled out by the meaning of another morpheme. It is convenient in each prefix to refer to a certain referent as in focus and another as not in focus. That is, a referent is considered to be in focus if it is signalled as the referent to which certain other morphemes add supplementary items of information. For example, in the prefix mń̨-' the occurrence of low tone (') on the verb stem following the prefix shifts agent into focus. The item of information thus given is supplemented by the occurrence of mn̨- which limits the reference to a second person agent, and by the occurrence of nasalization (.) which further limits it to a second person dual agent.

[9] For explanation of ppr (plural peripheral referent) see 2.1.

Either the agent or the topic may be in focus in a prefix (the signalling of the object is outside of the in-focus/out-of-focus dichotomy). When either agent or topic is in focus, the other of these two referents is out of focus and will be referred to as the peripheral referent of the prefix. Although the referent in focus is defined clearly as to number and person, the peripheral referent is identified simply as singular, nonsingular, ambiguous, or marked as not being signalled.

A singular peripheral referent (spr) is either the first or third person when the referent in focus is nonsingular, and either second or third person when the referent in focus is singular.

A plural peripheral referent (ppr) is always a third person. A prefix marked for plural peripheral referent merely signals the possible occurrence of such a referent—in many cases there being no peripheral referent either in the linguistic context or in the context of situation. That is, the predication k?ó nę̀n-ǫ́ may either be translated *knives I-to-them-two-of-them-gave* (i.e. I gave them two knives) or merely *knives I-two-of-them-gave.*

An ambiguous peripheral referent (apr) is considered to be signalled by a prefix which has an entirely ambiguous peripheral referent which may or may not be defined by the linguistic context or the context of situation. It is only through the context that one can tell who is the agent for a prefix such as mǫ́n- which has an ambiguous peripheral referent (but has second person dual topic in focus). In the paradigm of a verb such as ǫ́ *to give*, if the topic in focus is second person dual, and the object is inverse number, regardless of the occurrence of an agent in the context, the prefix selected is mǫ́n-.

Distinct from the above, is a further situation involving certain prefixes which do not mark peripheral referent at all.

2.2. The several morphemes which combine in the Kiowa verb prefix may be distributionally plotted and summarized in terms of such a formula as that given below. In this formula the Roman numerals symbolize five tagmemes,[10] i.e. units of distribution each of which consists of a position or pair of positions filled by a given morpheme or class of morphemes. Some of these tagmemes occur in linear sequence with each other, while three (I, V, II) occur simultaneously, i.e. in vertical sequence. One tagmeme—as discussed in the section immediately following—has a position of occurrence simultaneous with the verb stem itself.

$$\pm \text{III} \pm \text{IV} + \begin{matrix} \pm \text{I} \\ \text{V} \\ \pm \text{II} \end{matrix} \pm \text{IV} + \begin{matrix} \pm \text{I} \\ \text{verb stems} \end{matrix}$$

The pronominal prefixes (as hypermorphemic units) have a basic signal of topic in focus, plural peripheral referent, and singular object—these items of information being modified, shifted, or cancelled by the occurrence of the five tagmemes as follows:

2.21. Tagmeme I occurs optionally and is manifested by one morpheme which actualizes as low tone replacive {ˋ} affecting either the high tone of the prefix (and therefore symbolized in the formula as occurring above tagmeme V) or the high tone of the verb stem itself (and therefore symbolized in the formula as occurring above the verb stem). In the latter case, the low tone replacing the high tone of the stem may be considered to be a part of the prefix displaced to and occurring simultaneously with the stem.

The occurrence of morpheme {ˋ} shifts focus from topic to agent.[11] When occurring

[10] The concept and the term (formerly *grammeme*) are Pike's: Language, Part I, chapter 7, pp. 102–156, Glendale, California (1954).

[11] Which referent is in focus in a given prefix is in most cases signalled by the presence or absence of low tone. However, there are certain prefixes (listed in **2.4**) in which the use of low tone as a signal for shift of focus is not thus employed. In many of these prefixes low and high tones are simply employed to distinguish otherwise homophonous prefixes. For example, in comparing such prefixes as 53. èt-, 54. ét-ˋ, and 55. ét- it would seem according to the pattern of the other prefixes that they should all have the same tone as 54. ét-ˋ, the low tone signalling agent in focus as elsewhere; but in prefixes 53 and 55 the low tone supplements

simultaneously with the prefix, {ˈ} signals either nonsingular agent only (i.e. no topic or object signalled) as in ɛ̀· -pɔ́ttɔ̀ *they-two-are-eating*, or singular agent in focus with plural peripheral referent as in gyà-hɔ́·gyà *I-for-them-it-got*. When occurring simultaneously with the verb stem, {ˈ} signals nonsingular agent in focus as in cégùn-dɔ̀ bɔ́dɔ́·-hɔ̀·gyà *dogs we-for-him-them-got* (i.e we got some dogs for him).

2.22. Tagmeme II occurs optionally and is manifested by one morpheme {̣} which actualizes as nasalization of the entire prefix. According to its distribution with Tagmeme III, {̣} signals two persons: if a morpheme manifesting Tagmeme III signals a singular referent in focus, {̣} signals a singular peripheral referent also as in yą́-hɔ́·gyà *he-for-me-them-got*; if a morpheme manifesting Tagmeme III signals a nonsingular referent in focus, {̣} further defines it as dual as in kʔɔ́ mɛ̀n-kɔ̨̀ *knives you-two-two-of-them-brought* (i.e. you two brought two knives); if the referent in focus is singular with a plural peripheral referent, {̣} signals dual object as in kʔɔ́ nɛ̀n-kɔ̨̀ *knives I-two-of-them-brought*.

2.23. Tagmeme III occurs optionally and is manifested by a class of four morphemes. These morphemes indicate the person of the referent in focus.

Morpheme {D} signals first person referent in focus. It has three alternants d ~ gy ~ n which are phonologically determined. d ~ gy occur in the absence of nasalization —d preceding e and ɔ, gy preceding a—and n occurs in the presence of nasalization. According to its distribution with or without Tagmeme I, {D} signals first person singular agent with plural peripheral referent, or first person plural topic with ambiguous peripheral referent; e.g. á· gyàt-ɔ́ttʰɔ́tkɔ̀ *sticks I-them-pushed* and á· gyát-ɔ́ttʰɔ́tkɔ̀ *sticks someone-for-us-them-pushed* (i.e. some sticks were pushed for us).

Morpheme {B} signals second person referent in focus. It has four alternants b ~ bV ~ m ~ mV̨ which are phonologically determined. b ~ bV occur in the absence of nasalization and m ~ mV̨ occur in the presence of nasalization. b ~ m occur preceding a and prefix final; bV ~ mV̨ occur before a consonant with the vowel (V) reduplicating the following core vowel: e before e, a before i, and ɔ before ɔ as in bédé·-ˈ, bágí·-ˈ, and bɔ́bɔ́·-ˈ. Unless otherwise restricted by the occurrence of Tagmeme I, the second person signalled by {B} is nonsingular with an ambiguous peripheral referent signalled. e.g. báɔ̀ bá-kɔ̨̀ *cat you (pl)-theirs-brought* and bà-pʔé·báɔ́mdɔ̀ *you (pl)-are-smiling*. There are four prefixes (13. mɛ̨́n-, 16. mɛ̨́-, 18. bét-, and 21. bé-,) in which the signal of morpheme {B} as second person referent in focus may be cancelled by the occurrence of morpheme {e} of Tagmeme V when it signals third person in focus as described more fully in **2.25**. Cf. pálà bét-hɔ́·gyà which means either *beds someone-for-you (pl)-two-of-them-got* or *beds someone-for-them (pl)-two-of-them-got* (i.e. either someone got two beds for you, or someone got two beds for them).

Morpheme {G} signals either first person referent in focus or second person singular referent in focus according to distribution with other tagmemes. It has five alternants g ~ gy ~ d ~ n ~ y which are phonologically determined. g ~ gy ~ d occur in the absence of nasalization—g preceding ɔ, gy preceding a, and d preceding e—while n ~ y occur in the presence of nasalization—n preceding ɛ̨ and ɔ̨, y preceding ą. When Tagmeme II does not occur, {G} signals second person singular referent in focus with an ambiguous peripheral referent as in yáypɔ́ gɔ́-gú·nmɔ̨̀ *rope someone-yours-is-throwing-away*. When Tagmeme II occurs signalling a singular peripheral referent, {G} signals

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the special signal of morpheme {e} as described in **2.25.** and thereby makes a distinction between the prefixes which signal dual, plural, and inverse object, which distinction would otherwise be lost as it is in the case of prefix 18. bét-.

first person singular referent in focus as in yáypó gyá-gú·nmɔ̨ *rope I-yours-am-throwing-away.*

Morpheme {E} has nasalized and unnasalized alternants according to distribution with or without Tagmeme II and signals third person referent in focus. The occurrence of morpheme {T} of Tagmeme IV facilitates the identification of morpheme {E} in many instances since it may occur between {E} and core morpheme {e} of Tagmeme V as in the prefix édé·-ˋ where the d is an alternant of {T} occurring between the two identical vowels. However, in prefixes such as ét-, morpheme {T} of Tagmeme IV sometimes occurs following the core vowel e rather than preceding it, thus leaving it a matter of interpretation as to whether or not {E} may be considered to occur before the morpheme {e}. Since there seems to be no contrast in length between prefix 9. ę́T- and a prefix such as 43. which might be interpreted morphophonemically as Eę́T-, I rely heavily upon pattern analogy in postulating the occurrence of {E} in certain prefixes. For example, in comparing the following ten prefixes, since the morpheme {B} occurs throughout the first five, I conclude that morpheme {E} occurs throughout the second five although it is difficult to isolate {E} in the first two prefixes of the second five.

bà-	(2p-0-0)[12]	written morpho-	BÀ-
bá·-ˋ	(2p-spr-s)	phonemically as	BÁ·-ˋ
bédé·-ˋ	(2p-spr-d)		BTé·-ˋ
bágí·-ˋ	(2p-spr-p)		BTÁ·-ˋ
bódó·-ˋ	(2p-spr-i)		BTó·-ˋ
è-	(3p-0-0)		Eè-
é·-ˋ	(3p-spr-s)		Eé·-ˋ
édé·-ˋ	(3p-spr-d)		ETé·-ˋ
égí·-ˋ	(3p-spr-p)		ETÁ·-ˋ
édó·-ˋ	(3p-spr-i)		ETó·-ˋ

2.24. Tagmeme IV consists of two morphemes which signal object. Morpheme {·} actualizes as lengthening of the core vowel (Tagmeme V) and signals the occurrence of an object—the object always being singular unless otherwise indicated by morpheme {T}. It also signals singular peripheral referent. {T} signals nonsingular object.[13] It has four alternants t ~ g ~ d ~ n which are phonologically determined. t ~ g ~ d occur in the absence of nasalization—t prefix final, g preceding i,[14] and d preceding e—and n occurs in the presence of nasalization. {T} occurs following Tagmeme V in the absence of {·}[15] and preceding Tagmeme V in the presence of {·}.

2.25. Tagmeme V consists of a class of three morphemes which manifest a core tagmeme around which the other tagmemes of the prefix cluster. Any prefix may be solely constituted of a morpheme manifesting this tagmeme, or by such a morpheme plus morphemes manifesting all four other tagmemes. In view of the tendency in Kiowa for one morpheme to modify or even cancel out the meaning of another morpheme, it is understandable then, that Tagmeme V, by virtue of its very function as a core around which the other tagmemes cluster, should be especially subject to such complications. Tagmeme V is, then, the most difficult to analyze and describe. It must be considered to have the widest range

[12] These descriptive glosses are explained in **2.3.**

[13] In prefixes 43. Eę́T- and 51. Eę́T- morpheme {T} occurs irregularly signalling no object thus distinguishing these prefixes from those which signal a singular object.

[14] The sequences /gi/ and /nj/ are probably a shortening of /gya/ and /nyą/ similar to the phenomenon described by Crowell (IJAL 15.163, 1949), "The older speakers. . .have an [a]-like off-glide after their high vowels so that they say /yia/ while their grandchildren say /yi/ *two.*" Also in comparing Harrington (BAE-B 84, pg. 92) of 1918 Kiowa speech I find the same type of change evident in words like /kuɔt/ *book* (writing table) which is pronounced in present day speech as a decidedly short monosyllable /kút/.

[15] Regardless of the occurrence of morpheme {·}, morpheme {T} always precedes an unnasalized core vowel /A/.

of signalling function of any tagmeme in the prefix complex. All three of these morphemes {e}, {A}, and {ɔ}, according to their distribution with or without other tagmemes, sometimes occur when no object is signalled, sometimes signal a singular object, and at other times differentiate between nonsingular objects as being dual, plural, or inverse.

{e} has the widest distribution of the three core morphemes and signals in two ways.[16] In certain prefixes (nos. 13, 16, 18, 21, 43–46, 51–55) it has what we might term a "special" signal as follows: it signals third person nonsingular referent in focus and obscures the signal of object to the extent that you cannot tell by the prefix alone if there is an object at all or what its number might be. As mentioned above in **2.23,** {e} also cancels the signal of {B} in the four prefixes in which it employs this 'special' signal. In most prefixes however, {e} has a 'regular' signal—that is, parallel to the signals of the other morphemes which manifest Tagmeme V and correlating with the signals of other tagmemes occurring with it as follows: if morpheme {T} occurs indicating the presence of a nonsingular object, the occurrence of {e} either signals a dual object when topic is in focus and/or there is a singular peripheral referent (as signalled by distribution with Tagmemes I–IV) as in á· dé·-hɔ̀·gyà *sticks someone-for-him-two-of-them-got* (i.e. someone got two sticks for him), or signals ambiguously dual or inverse object when there is a plural peripheral referent (as signalled by distribution with Tagmemes I–IV) as in á· èt-hɔ́·gyà *sticks someone-for-them-two-of-them-got* (i.e. someone got two sticks for them) and á·-dɔ̀ èt-hɔ́·gyà *sticks someone-for-them-it-got* (i.e. someone got a stick for them). If {T} does not occur indicating a nonsingular object, the occurrence of {e} signals redundantly according to distribution with Tagmeme III, either third person referent in focus as in è-dá·mgyàdɔ̀ *they-are-tired* or plural peripheral referent with no object as in bè-gɔ́p *you-them-hit.*

Morpheme {A} has two alternants a ~ i which are phonologically determined. a occurs in monosyllabic prefixes and i in disyllabic prefixes. If the occurrence of {T} indicates nonsingular object, {a} further limits the object to plural as in tʰá·bà mɔ̀cáy yą́n-tˀàt *cigarette papers I-for-him-them-cut-off.* If {T} does not occur indicating nonsingular object, {A} signals either singular peripheral referent when the referent in focus is first or second person (as signalled by Tagmeme III) as in kút gyá-kǫ́ *book I-to-him-it-brought,* or singular object when there is a plural peripheral referent (as signalled by Tagmemes I or III) as in kút bá-kǫ́ *book you-for-them-it-brought.*

If the occurrence of {T} indicates nonsingular object, and /or if agent is in focus with singular peripheral referent, the occurrence of {ɔ} further limits the object to inverse number as in kútà·-dɔ̀ mǫ́n-hɔ́·gyà *pencil someone-for-you-two-it-got.* If {T} does not occur indicating nonsingular object, the occurrence of {ɔ} signals an ambiguous peripheral referent. The distinction between occurrence of no object and singular object is not made except in one prefix (4. gɔ̀-) where low tone irregularly signals no object.

2.3. Each prefix is listed followed by a morphophonemic transcription according to the preceding analysis[17] with a descriptive gloss which gives its meaning. These glosses use the abbreviations given for the person-number categories as described in **1.1-3** and **2.1.** The abbreviations for each of the three referents occur marking agent, topic, and object, in that order; and are separated by a hyphen (-) as in (ls-ppr-p) which may be read first singular agent in focus, plural

[16] An alternant analysis would be to postulate two homophonous morphemes {e}.

[17] The following six prefixes have not been accounted for within the scope of this analysis: 86. Φ- (3s-0-0)(3s-ppr-s), 87. á- (ind-0-0)(spr-3s-s), 88. à- (1s-0-0)(2s-3s-0), 89. ǫ́-(spr-1s-0)(spr-1s-s), 90. ǫ́m- (ind-ppr-0), and 91. ǫ̀m- (2s-0-0)(1s-2s-0)(3s-ppr-0).

KIOWA PRONOMINAL VERB PREFIXES

				26. dè-	Dè-	(1s-ppr-0)				
				27. gyà-	DÃ-	(1s-ppr-s)	59. gyá-	GÁ-	(1s-spr-s)
1.	nę́-	Gę́-	(spr-1s-d)	28. nę̀n-	DęT-	(1s-ppr-d)	60. nę́n-	GęT-	(1s-spr-d)
2.	yą́-	GĄ́-	(spr-1s-p)	29. gyàt-	DÃT-	(1s-ppr-p)	61. yą́n-	GĄT-	(1s-spr-p)
3.	nį́-	Gį́-	(spr-1s-i)	30. dé-	Dé-	(1s-ppr-i)	62. gɔ́-	Gɔ́-	(1s-spr-i)
4.	gɔ̀-	Gɔ́-	(apr-2s-0)	31. bè-	Bè-	(2s-ppr-0)			
5.	gɔ́-	Gɔ́-	(apr-2s-s)						
6.	dét-	GéT-	(apr-2s-d)	32. mę̀n-	BęT-	(2s-ppr-d)			
7.	gyát-	GÃT-	(apr-2s-p)	33. bát-	BÃT-	(2s-ppr-p)			
8.	gɔ́t-	GɔT-	(apr-2s-i)	34. bé-	Bé-	(2s-ppr-i)			
9.	ę́n-	ęT-	(spr-3s-d)	35. ę̀-	Eę̀-	(3s-ppr-d)*			
10.	ą́n-	ĄT-	(spr-3s-p)	36. gyá-	TÁ-	(3s-ppr-p)			
11.	ɔ́-	ɔ́-	(spr-3s-i)	37. é-	Eé-	(3s-ppr-i)			
12.	mį́-	Bį́-	(apr-2d-0)*	38. mé-	Bé-	(2d-ppr-0)	63. mą̀-	BĄ́-	(2d-0-0)
	prefix 12		(apr-2d-s)	39. má-ˈ	BÁ-ˈ	(2d-ppr-s)	64. má-ˈ	BÁ-ˈ	(2d-spr-s)
13.	mę́n-	BęT-	(apr-2d-d)*	40. mę́n-	BęT-	(2d-ppr-d)	65. mę́né-ˈ	BTę́-ˈ	(2d-spr-d)
14.	mán-	BÃT-	(apr-2d-p)	41. mán-ˈ	BÃT-ˈ	(2d-ppr-p)	66. mánį́-ˈ	BTÁ-ˈ	(2d-spr-p)
15.	mį́n-	Bį́T-	(apr-2d-i)	42. mę́n-ˈ	BęT-ˈ	(2d-ppr-i)	67. mį́né-ˈ	BTį́-ˈ	(2d-spr-i)
				43. ę́n-	EęT-	(3d-ppr-0)	prefix 35		(3d-0-0)
16.	mé-	Bé-	(apr-3d-s)	44. é-	Eé-ˈ	(3d-ppr-s)	68. é-ˈ	Eé-ˈ	(3d-spr-s)
	prefix 13		(apr-3d-d)	45. ę́n-	EęT-	(3d-ppr-d)*	69. ę́n-ˈ	ETę́-ˈ	(3d-spr-d)
	prefix 13		(apr-3d-p)	46. ę́n-ˈ	EęT-ˈ	(3d-ppr-p)	70. ę́ní-ˈ	ETĄ́-ˈ	(3d-spr-p)
	prefix 13		(apr-3d-i)	prefix 45		(3d-ppr-i)	71. ę́né-ˈ	ETį́-ˈ	(3d-spr-i)
17.	bɔ́-	Bɔ́-	(apr-2p-0)*	47. bé-	Bé-	(2p-ppr-0)	72. bà-	BÃ-	(2p-0-0)
	prefix 17		(apr-2p-s)	48. bá-ˈ	BÁ-ˈ	(2p-ppr-s)	73. bá-ˈ	BÁ-ˈ	(2p-spr-s)
18.	bét-	BéT-	(apr-2p-d)*	49. bét-	BéT-	(2p-ppr-d)*	74. bédé-ˈ	BTé-ˈ	(2p-spr-d)
19.	bát-	BÃT-	(apr-2p-p)	50. bátˈ-	BÃT-ˈ	(2p-ppr-p)	75. bágí-ˈ	BTÁ-ˈ	(2p-spr-p)
20.	bɔ́t-	BɔT-	(apr-2p-i)	prefix 49		(2p-ppr-i)	76. bɔ́dɔ́-ˈ	BTɔ́-ˈ	(2p-spr-i)
				51. ét-	EéT-	(3p-ppr-0)	77. è-	Eè-	(3p-0-0)
21.	bé-	Bé-	(apr-3p-s)	52. é-ˈ	Eé-ˈ	(3p-ppr-s)	78. é-ˈ	Eé-ˈ	(3p-spr-s)
	prefix 18		(apr-3p-d)	53. èt-	EèT-	(3p-ppr-d)	79. édé-ˈ	ETé-ˈ	(3p-spr-d)
	prefix 18		(apr-3p-p)	54. ét-ˈ	EéT-ˈ	(3p-ppr-p)	80. égí-ˈ	ETÁ-ˈ	(3p-spr-p)
	prefix 18		(apr-3p-i)	55. ét-	EéT-	(3p-ppr-i)	81. édɔ́-ˈ	ETɔ́-ˈ	(3p-spr-i)
22.	dɔ́-	Dɔ́-	(apr-1p-0)*						
	prefix 22		(apr-1p-s)	56. á-ˈ	Á-ˈ	(ind-ppr-s)	82. á-ˈ	Á-ˈ	(ind-spr-s)
23.	dét-	DéT-	(apr-1p-d)	57. èt-	èT-	(ind-ppr-d)*	83. dé-ˈ	Té-ˈ	(ind-spr-d)
24.	gyát-	DÃT-	(apr-1p-p)	58. gyá-ˈ	TÁ-ˈ	(ind-ppr-p)	84. gyá-ˈ	TÁ-ˈ	(ind-spr-p)
25.	dɔ́t-	DɔT-	(apr-1p-i)	prefix 57		(ind-ppr-i)	85. dɔ́-ˈ	Tɔ́-ˈ	(ind-spr-i)

peripheral referent, and plural object. A zero (0) indicates no peripheral referent, or no object as in (2d-0-0) which may be read second dual agent only. The occurrence of an asterisk (*) after a prefix indicates that there are other meanings for that prefix given elsewhere in the lists.

2.4. Following is a complete listing of each morpheme with the number of the prefixes in which they occur according to the above analysis, and also with the numbers of those prefixes in which they occur as exceptions to this analysis.

{ˈ}: 26–29, 31, 32, 35, 39, 41, 42, 44, 46,

48, 50, 52, 54, 56, 58, 64–85; Exceptions (cf. fn. 11): 4, 30, 33, 34, 36–38, 40, 43, 45, 47, 49, 51, 53, 55, 57, 59–62.

{.} 1–3, 9, 10, 12–16, 28, 32, 35, 38–46, 60, 61, 63–71; Exceptions: 11, 59, 62.

{D} 22–30.

{B} 12–15, 17–20, 38–42, 47–50, 63–67, 72–76.

{G} 1–8, 59–62.

{E} 35, 37, 43–46, 51–55, 68–71, 77–81.

{·} 64–71, 73–76, 78–85.

{T} 6–10, 13–15, 18–20, 23–25, 28, 29, 32, 33, 36, 40–42, 45, 46, 49, 50, 53–55, 57, 58, 60, 6¹, 65–67, 69–71, 74–76, 79–81, 83–85; Exceptions (cf. fn. 13): 1–3, 11, 30, 34, 35, 37, 43, 51, 62.

{e} 1, 6, 9, 13, 16, 18, 21, 23, 26, 28, 30–32, 34, 35, 37, 38, 40, 42–47, 49, 51–55, 57, 60, 65, 69, 74, 79, 83.

{A} 2, 7, 10, 14, 19, 24, 27, 29, 33, 36, 39, 41, 48, 50, 56, 58, 59, 61, 63, 64, 66, 70, 72, 73, 75, 80, 82, 84.

{ɔ} 3–5, 8, 11, 12, 15, 17, 20, 22, 25, 62, 67, 71, 76, 81, 85.

THE PHONEMES OF AN ARAUCANIAN DIALECT[1]

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0. Introduction
1. Stress
2. Vowels
3. Consonants
4. Phoneme alternations
5. Phoneme distribution

0.1. This paper is based on a corpus collected by Rodolfo Lenz in the Upper Perquenco near Pua (Chili, province of Malleco, department of Mariluán) during the years 1896–1897.[2] The materials were elicited from Calvún, a native informant about twenty-five years old, who spoke Spanish quite deficiently. He considered himself Moluche, but since he lived among Pehuenches, and his dialect did not differ overtly from theirs, Lenz names it, with some caution, Pehuenche.[3]

0.2. The corpus consists of 345 rather brief utterances in conversational form, 37 traditional tales, 7 descriptive narratives, and 15 songs. The transcription is phonetic. Each symbol is in general accurately and unambiguously explained, except perhaps a couple of them that need some interpretation as to their exact phonetic value.[4] Lenz was consciously aware, in most cases, of free and conditioned variants—physiological, and phonetically conditioned variants, in his own terms—so that an approximate phonemic analysis of segmental phonemes is already implicit in his remarks. Nevertheless, the phonemic status of certain sounds remains somewhat dubious owing chiefly, I believe, to two circumstances: (1) sounds of low frequency, and morphemes of few occurrences seem not to have been sufficiently rechecked; (2) the transcription reflects, rather undiscriminately, incidental forms of careless speech, and divergencies in pronunciation probably due exclusively to differences in tempo. The latter will probably have to be treated as morphophonemic alternations, so that ultimately they cannot affect the phonemic analysis. More regrettable is the fact that features of stress, intonation, and juncture are either entirely disregarded or not satisfactorily described.

0.3. The present paper attempts to supply an explicit and more consistent phonemic formulation of Lenz's materials. Given the nature and the deficiencies of the data, the

[1] Araucanian is a native Southamerican language spoken by about 200,000 people in Chili, and by an only roughly calculated but far lesser number of speakers in Argentina (more or less 8,000). They are concentrated chiefly in the provinces of Bío-Bío, Malleco, and Cautín (Chile), and in the province of Neuquén in Argentina.

[2] Rodolfo Lenz, Estudios Araucanos, Santiago de Chile, 1895–1897 (reprint with different paging from Anales de la Universidad de Chile, vols. 90–98, 1895–1897. I quote from the reprint). I have made use of Lenz's other studies on the Araucanian language, especially the one appeared in Biblioteca de Dialectología Hispanoamericana 6.234–244 (Buenos Aires, 1940). Lenz was a distinguished phonetician; for data on his scholarship see Amado Alonso, Biblioteca de Dialectología Hispanoamericana 6.269–278.

[3] Lenz recognizes among the Araucanians from Chili four linguistic groups: Picunche, Huiliche, Pehuenche, and Moluche. This division agrees with the tribal classification by John M. Cooper in Handbook of Southamerican Indians 2.690 (1946), where the Moluche is called Mapuche. But since the differences between Pehuenche and Moluche are small, and only lexical, Lenz seems to consider them as two subdivisions of the same dialect (cf. Estudios Araucanos, 313–314, 447–448). For the difficulties involved in the identification and classification of Araucanian tribes, see Cooper, ibid. 692–693 and 755, with special reference to Pehuenche. For other classifications see John A. Mason, ibid. 6.307–308 (1950), and P. Rivet-Č. Loukotka in Les langues du monde, 1101–1102 (Paris, 1952).

[4] Most of Lenz's symbols have been replaced in this paper by others of current usage.

analysis is not complete, nor exempt of doubts. But a tentative solution is given in all cases, except when—as in suprasegmental phonemes—no conclusion at all can be drawn from the corpus. The main interest of the phonemic system lies, I think, in the fact that it exhibits five phonemically distinct positions in the nasal series.[5] Also remarkable are the frequent alternations of phonemes, perhaps of an affective character.

1. Lenz makes the following points concerning stress, (appliable to all the dialects): (1) it is not very strong; (2) it moves from one syllable to another depending on the rhythm of the utterance; (3) it moves from one syllable to another when particles are joined to the word; (4) the words bear in general penultimate stress when ending in a vowel, and ultimate stress when ending in a consonant. An example from Huiliche is given of the mobility of stress: [təfámu məli ñi šúka] *here is my house*, but [ñi šuká mo kəpán] *I come from my house*.[6] From (4) it seems that stress might be predictable with reference to juncture; (2) points to an utterance-stress; and (3) to a stress which might be stated in terms of classes of morphemes.[7] Since accents are only exceptionally marked in the Pehuenche texts, no conclusion can be drawn from the corpus.

2. The following vowels occur: [i ī u e ə o a].

[ī] and [ə] are in complementary distribution: [ī] is always stressed, [ə] occurs only in unaccented syllables.[8] Before a prepalatal consonant, [ī] is in free variation with [ïᵉ], [ïᵊ], and [ïⁱ]; example: [fïča ∼ fïᵊča ∼ fïᵊča ∼ fïⁱča] *old, great*. All these segments may be grouped in one phoneme /ï/.

[o] after [k] is in free variation with [ᵘo], as in [kom ∼ kᵘom] *all*. Both variants may be grouped in one phoneme /o/.

[i] after consonant (especially [w] and the nasals) is in free variation with [ᵘi] and [ʲi] as in [čoŋi ∼ čoŋᵘi] *it dies out*; [puwi ∼ puwʲi] *he came*. The variants may be grouped in one phoneme /i/.[9]

The remaining vowels are in contrast with each other and with the above listed. Consequently, there are six vowel phonemes: /i ī u e o a/.

The two semivowels [w] and [i̯] are classified as consonants on account of their distribution.

3.1. The following consonants occur:

[p], [t̪], [t], [k̟], [k]: voiceless stops, at bilabial, dental or interdental, alveolar, prevelar, and velar positions. Sometimes they are very strongly articulated, especially after [ə].

[tʳ], [č]: voiceless prepalatal affricates; [tʳ] is apical (more or less like English [tr] in *tree*); [č] is dorsal. Both are sometimes preceded by a brief homosyllabic friction.

[β], [v], [f̪], [y], [γ]: voiced fricatives, at bilabial, labiodental, dental or interdental, palatal, and velar positions. [γ] is a very open consonant, with little friction. Fricatives in general are frequently produced without full voice.

[ɸ], [f], [Y]: voiceless fricatives, at bilabial, labiodental, and palatal positions.

[s̪], [s]: voiceless sibilants, apico-dental and lamino-alveolar respectively.

[š]: voiceless alveolar fricative.

[r]: voiced frictionless alveolar continuant, perhaps retroflex.

[l̪], [l], [l̠], [λ]: voiced lateral continuants, at dental, alveolar, prepalatal, and palatal positions. [l̪] is apical, but does not seem to be retroflex.

[5] This fact seems not to have been observed up to now in any other language; cf. Charles F. Hockett, A Manual of Phonology, 119 (1955).

[6] [təfámu] *here*; [məl-] (*to*) *be*; [-i] *he*; [ñi] *my*; [šuka] *house*; [-mo] *from*; [kəpa-] (*to*) *come*; [-n] *I*.

[7] The situation described by Lenz reminds us considerably of the phonemic status of stress in Wishram Chinook, as described by W. Dyk and D. H. Hymes, IJAL 22.238–241 (1956).

[8] This distribution is explicitly stated by Lenz, and the alternation corroborated by examples in the corpus; examples: [kīla ∼ kəla] *three*; [rīpī ∼ rəpī] *road*.

[9] The raised vowels represent in all cases very brief glides.

[m], [n̪], [n], [ɳ], [ñ], [ŋ]: voiced nasal continuants, at bilabial, dental or interdental, alveolar, prepalatal, palatal, and velar positions. [ɳ] is apical, but does not seem to be retroflex.

[w]: voiced bilabial rounded semivowel.

[i̯]: voiced velar unrounded semivowel.

3.2. Of the above sounds, the following do not contrast:

[ʞ] occurs only in contact with the front vowels; in this position it varies freely with [k], as in [ʞei̯] ~ kei̯] *red*.

[β], [v], [ɸ], [f] are in free variation, as in (təβa ~ təva ~ təɸa ~ təfa] *here*.

[Y] occurs only initially after pause; in this position it varies freely with [y], as in [Yəka- ~ yəka-] (*to*) *be afraid*.

[ɣ] and [i̯] are in complementary distribution: [ɣ] occurs before [a], [i̯] before vowels other than [a]. (In syllabic final, it is not clear which of the two occur.) Examples are [ʤeɣiñ] *volcano*; [-ayeɣal-] *for laughing*.

[s̪] and [s] are in free variation, as in [kans̪a-kansa-] (*to*) *be tired*.

[l] occurs only in juxtaposition with a back vowel; in this position it varies freely with [l], as in [wi̯le ~ wile] *morning*.

[ɳ] also occurs only in juxtaposition with a back vowel, varying freely with [n], as in [wi̯ɳe ~ wine] *first*.

Each of the above sets of sounds can be joined in one phoneme. The remaining sounds, except [š] (see **3.33**), are in contrast with those listed above and with each other, so that they must be considered allophones of distinct phonemes; there are then twenty-one consonant phonemes: /p t̪ t k tʳ č β ʤ y ɣ r s̪ l ʎ m n̪ n ñ ŋ w/.

3.3. Some points in the phonemic analysis need further remarks.

3.31. It may seem queer to find a partially devoiced [ʤ] (represented by Lenz with a special symbol), together with the non-occurrence of the totally unvoiced [ʧ]. To assume that Lenz's symbol covers both the devoiced and the voiceless forms, would be arbitrary: Lenz distinguishes accurately elsewhere one type of sound from the other one. This lack of parallelism between the allophones of /ʤ/ and those of the other fricatives seems to reflect the introduction of Spanish loanwords with [s] which occasioned the redistribution of the allophone. Lenz's testimony (see **3.32**) corroborates this hypothesis, and, besides, I believe the analysis of the other dialects and of the works of the ancient grammarians will also confirm it.[10]

3.32. In Araucanian words not of Spanish origin, both [s̪] and [s] vary freely with /ʤ/. Although in the data this alternation actually takes place in only a small number of words, Lenz explicitly states that [ʤ] "upon losing its voice seems to change easily to [s] and less frequently to [s̪]",[11] but he leaves out of consideration Spanish loanwords. If we were to exclude them too, we would have to assign [s̪] and [s] to /ʤ/. But since loanwords with [s̪] or [s] are very numerous, but never in free variation with [ʤ], and since loans with [ʤ] never show [s̪] or [s] either, I have assigned the two sibilants to one phoneme /s/, and postulated an alternation of phonemes in the rest of the words. Undoubtedly, these complex facts in the data reflect a moment of phonemic transition and instability, due to the introduction of Spanish loanwords with dorso-alveolar [s].

3.33. [š] is a sound of extremely low frequency. Apart an onomatopoeic word [čïšil] (the cry of the widgeon), and a few Spanish loans, in which it varies freely with /s/, it occurs in the following morphemes (none of which occurs more than twice): [šiwal-] (*to*) *tuck up* (*one's clothes*); [weša] *bad*, in which

[10] The voiceless variants of fricatives are the result of a devoicing process which is hardly recorded in the dialect of the North, Picunche, that has only [v], [ʤ], and [r]; but which is already accomplished in Huiliche, the dialect of the South, that possesses instead [f], [ʧ], and [š] respectively. The free variation of voiced and voiceless fricatives in Pehuenche represents an intermediate step between the voiced sounds of Picunche and those of Huiliche which are almost all voiceless.

[11] Estudios Araucanos, 135. Furthermore, Araucanian words (not loans) only with [ʧ] or [s] in the text are usually identified in footnotes by Lenz with the same words with [ʤ].

it varies freely with /r/, /s/, and /ð̲/; [kuše] *old*, in which it varies freely with /s/ and /ð̲/ but contrasts with /r/ ([kure] *wife*). Neither these data nor Lenz's description allow of any definite decision concerning its status; I consider it here, rather arbitrarily, an allophone of /s/, imputing the non-occurrence of [siwal-] to mere chance.[12]

3.34. The assignment to [y], [i̯], and [w] of a different phonemic status than that assigned to the glides [ⁱ], [ᵎ] and [ᵘ] mentioned in **2**, is not arbitrary. There is contrast between the first three, which have the same distribution as every other continuant (see **5**), and the glides, which occur always as part of syllable-nuclei, and can be in every case replaced by the vowel alone; besides, Lenz distinguishes consistently between [y] and [ⁱ], [i̯] and [ᵎ], [w] and [ᵘ]. On the other hand, [y], [w], and [i̯] cannot be joined in one phoneme with [i], [u], and [ī] respectively, because they contrast in identical positions. Examples: [feyikači] *then*; [feïrke] *that is right*; [wiywīn] *I am thirsty*; [piiña] *bit* (for horses); [uīkai] *he opened*; [wītʳ en] *I am cold*; [wul-] (*to*) *sell*; [puwkei] *he is coming*; [puuyu] *deer*; [walwe] *farm*; [eluayu] *I shall give you*; [i̯ñīm] *bird*; [weṇii] *friend*; [kuī] *hand*; [reḭle] *seven*. The facts might be met with differently if we posited some phonemic feature of syllabification, which does not seem otherwise necessary.

4. A characteristic of the dialect is the frequent alternations of phonemes. Lenz, as well as some early grammarians, attribute them an emotive value. But Lenz also admits that perhaps the formal changes may correspond to some modifications of meaning which he did not notice and unified therefore in the translation. The following phonemes alternate: /t/, /t̯/, /č/: βīta, βīt̯a, βīča *old*; /t/, /t̯/: βeṇte, βeṇt̯e *so much*; /t/, /t̯/, /tʳ/: wente, weṇt̯e, wentʳe *above*; /ð̲/, /s/: kið̲u, kisu *alone*; /ð̲/, /s/, /r/: weð̲a, wesa, wera *bad*; /n/, /n̯/: mawīn, mawīn̯ *to rain*; /m/, /ŋ/: moλin, ŋoλin *to get drunk*; /ī/, /u/: leuβī, leuβu *river*; /ī/, /e/: korī, kore *broth*.

5. Syllables have the following structures: V, CV, VC, CVC (the last two only before consonant or pause); in Spanish loanwords also CCV, the second consonant being always /r/ or /l/, as in /poβre/ < Sp./pobre/ *poor*, /βlanko/ < Sp./blanko/ *white*. Some monosyllabic consonant clusters do occur in words that are not loans, but alternating in every case with CəC; examples: [tfa ~ təfa *here*; [puwrkei ~ [puwərkei] *he really comes*. These clusters must be interpreted phonemically as /CVC/.[13]

Distributionally, the consonants fall into two intersecting classes, according to their position in the syllable: stops occur only initially; the remaining ones—which may be labeled continuants—occur both initially and finally.[14] The consonants occur before all vowels, except /w/ that does not occur before /o/; /γ/ before /o/, /u/; /t̯/ before /i/, /o/; /l̯/ before /i/, /e/; /n̯/ before /i/, /e/, /o/, /u/. The occurrences of /t̯/, /l̯/, and /n̯/ are furthermore restricted to a few morphemes, but all these restrictions may be due to inaccuracy in the recording: Lenz himself points out to the fact that only at the end of his work with the informant he discovered those three sounds were distinctively different from /t/, /l/, and /n/ respectively.[15]

[12] The marginal status of [š] in Pehuenche is not what we would have expected after the comparison with the other dialects, for [š] is in Huiliche the voiceless sound corresponding to [r] in Picunche. We could have expected therefore [š] to be in Pehuenche a free variant of [r], and Lenz states in the Introduction to all the dialects (p. XXIII) that this is precisely the case. But among the preliminary remarks on Pehuenche he does not mention the fact again, while, on the contrary, he calls attention to the contrast between [kuše] and [kure] (p. 131). I have prefered to be guided only by the evidence in the text, in which case no other analysis seems to meet the facts better than the one I have proposed.

[13] It is mainly for this reason that I have rejected the phonemization of [tʳ] as /t/ + /r/.

[14] In two interjections this rule is infringed: /ap/ *hello!*, and /βot/ *great Scott!, gee!*

[15] It is worth noting that the relevance of the

Bi-syllabic clusters of consonants that have been observed are the following: βp, βt̲, βt, βk, βtʳ, ββ, βr, βl, βm, βn, βŋ, βw; ð̲p, ð̲k, ð̲tʳ, ð̲y, ð̲r, ð̲ŋ; γp, γt, γk, γβ, γl, γm, γŋ; yβ, yw; rp, rk, rt, rβ, rl, rŋ, rw; sp, st, sk; l̲p, l̲k, l̲ŋ; lp, lt, lk, ltʳ, lč, lβ, ly, lγ, lr, lm, ln, lñ, lŋ; λp, λk, λč, λβ, λr, λm, λñ, λw; mp, mt̲, mt, mk, mtʳ, mč, mβ, mð̲, my, mγ, mr, ml, mm, mn, mñ, mŋ, mw; n̲t̲, n̲t, n̲k, n̲tʳ, n̲w; np, nt, nk, ntʳ, nč, nβ, nð̲, ny, nr, ns, nl, nλ, nm, nn, nñ, nŋ, nw; ñp, ñt, ñk, ñč, ñβ, ñr, ñl, ñm, ñŋ, ñw; ŋk, ŋč, ŋð̲, ŋr, ŋl, ŋm, ŋn; wt, wk, wtʳ, wl, wm.

As many as five vowels may appear in succession, each belonging to a different syllable. Not all the possibilities of occurrence have been observed; the most noticeable restrictions are (1) no more than two like vowels occur in contact; (2) the following pairs do not occur: ïo, eï, aï, oï, oo.

dental sounds in front of the alveolar ones was already clearly recognized by Father Valdivia at the beginning of the XVIIth. century (Luis de Valdivia, Arte, Vocabulario y Confessionario de la Lengua de Chile, Lima, 1606; ed. facs. J. Platzmann, Leipzig, 1887, p. 9).

NOTES AND REVIEWS

Athapaskische Chronologie: Versuch einer Revision

Wilhelm Milke

Wie stark der theoretische und methodische Fortschritt der Lexiko-Statistik von einer ausreichenden Dokumentation abhängt hat das Echo gezeigt, das die in dieser Hinsicht exemplarische Arbeit H. Hoijers (1956) ausgelöst hat. (vgl. Hymes 1957, Kroeber o.J.). Nachstehend soll das Material von Hoijer unter neuartigen Gesichtspunkten nochmals analysiert werden in der Hoffnung, dadurch eine allgemeine Methode zur Überwindung gleichartiger Schwierigkeiten zu finden, wie sie bei den Athapasken-Sprachen auftraten. Die von Hoijer veröffentlichten, von Hymes berichtigten "Zeittiefen" setzten einer historisch-geographischen Interpretation sehr grosse Widerstände entgegen (vgl. Kroeber o.J.). Es wird sich zeigen, ob unser Versuch plausibelere Resultate erbringt.

Da Hoijer für jedes Paar von Sprachen alle Nicht-Cognaten angibt und aus den Listen der einzelsprachlichen Entsprechungen der Bedeutungs-Funktionen erkennbar ist, für welche Bedeutungen eine Entsprechung nicht bekannt ist, war es möglich, eine Tabelle zu konstruieren, die für jede Bedeutungs-Funktion eine oder mehrere Serien von Cognaten sowie etwaige singuläre Entsprechungen in ihrer Verteilung über die 15 Athapasken-Sprachen zeigt. Dabei habe ich alle Gleichsetzungen und Trennungen Hoijers übernommen mit Ausnahme folgender Korrekturen:

Carrier: n = 99 (nicht 100), da Nr. 84 nicht belegt,

Sarcee: n = 99 (nicht 100), da Nr. 82 nicht belegt,

Hupa-Hare (S. 230): Da Nr. 41 für Hupa-Chippewayan cognate und (S. 227) für Hare-Chippewayan cognate, es auch zwischen Hupa-Hare cognate sein. Also ist Nr. 41 für Hupa-Hare bei den NC zu streichen.

Von linguistischen Korrekturen habe ich abgesehen, obwohl z.B. Nr. 35 Chip -cá-gwór wohl nur irrtümlich von Nav -god, Car -gwed, Mat -gwo?ł getrennt ist. Zu den Lautentsprechungen vgl. Nr. 37 (Nav -bid, Chip bór, Car -bed, Mat -bi?ł).

1. Die 15 Athapasken-Sprachen wurden in drei Gruppen eingeteilt: Süd-Gruppe (Nav etc.), Nord-Gruppe (Ku, Ha, Chip, Beav, Car, Sar) und Pazifische Gruppe (Galice, Kato, Mattole, Hupa). Die Zuteilung des Galice zur Pazifischen Gruppe, zunächst nach rein geographischen Gesichtspunkten vorgenommen, erwies sich dann auch aus inneren Gründen als zweckmässig.

Nunmehr wurden die Serien von Cognaten nach ihrer Verbreitung in Kategorien eingeteilt:

1. Universal (bei allen Sprachen, soweit Belege),
2. 3-Gebiete (S + N + P),
3. 2-Gebiete
   a. S + N,
   b. S + P,
   c. N + P,
4. 1-Gebiet (mindestens bei zwei Sprachen)
   a. S,
   b. N,
   c. P,
5. Singulär (nur bei einer einzigen Sprache auftretend).

Die Tab. 1 zeigt die Verteilung dieser Kategorien auf die Einzelsprachen. Die letzte Spalte gibt an, wieviele Serien von Cognaten überhaupt in die betreffende Kategorie fallen. Für die Kategorien 1–2 und 1–3 sind Zwischensummen (S_{1-2} bzw. S_{1-3}) gebildet. Die Endsumme (n) ist gleich der Zahl der für die betr. Sprache belegten Bedeutungsfunktionen. Zusätzlich sind noch die Prozentwerte $p_{1-2} = S_{1-2}/n$ und $p_{1-3} = S_{1-3}/n$ aufgeführt.

TABELLE 1: Verteilung der Cognaten nach Kategorien

	Nav	Chi	SC	Jic	Li	Ku	Ha	Chip	Beav	Car	Sar	Gal	Hup	Mat	Kat	h
1.) Universal	27	27	27	27	27	27	27	27	24	26	27	25	27	27	26	27
2.) 3 Gebiete	53	52	50	52	52	42	42	50	37	44	42	41	38	37	40	54
$S_{1\text{-}2}$	80	79	77	79	79	69	69	77	61	70	69	66	65	64	66	84
3.) 2 Gebiete																
a.) S–N	6	8	6	5	6	3	4	3	2	3	1	—	—	—	—	8
b.) S–P	2	2	2	1	1	—	—	—	—	—	—	1	—	1	1	2
c.) N–P	—	—	—	—	—	4	7	9	10	8	7	8	10	4	10	14
$S_{1\text{-}3}$	88	89	85	85	86	76	80	89	73	81	77	75	75	69	77	108
4.) 1 Gebiet																
a.) S	9	10	8	11	10	—	—	—	—	—	—	—	—	—	—	12
b.) N	—	—	—	—	—	13	13	7	4	5	5	—	—	—	—	19
c.) P	—	—	—	—	—	—	—	—	—	—	—	3	10	12	7	14
5.) Singulär	3	1	7	4	4	11	7	4	5	13	17	11	15	18	10	130
n	100	100	100	100	100	100	100	100	82	99	99	89	100	99	94	283
$p_{1\text{-}2}$	.800	.790	.770	.790	.790	.690	.690	.770	.744	.707	.697	.742	.650	.646	.702	
$p_{1\text{-}3}$	.880	.890	.850	.850	.860	.760	.800	.890	.890	.818	.778	.843	.750	.697	.819	
	.866					.823						.777				
	.825															

Obwohl unsere Kategorien ausschliesslich mit Rücksicht auf die von Hoijer verglichenen 15 Sprachen gebildet wurden und die Einordnung der Serien sich wahrscheinlich in einigen Fällen ändern würde, wenn weitere Sprachen berücksichtigt würden, gibt die Tab. 1 einige interessante Aufschlüsse. Zunächst fällt auf, wie stark die Anzahl der singulären Elemente von Sprache zu Sprache schwankt (Chir 1, Mat 18). Vielleicht würde eine Revision der Wortvergleichungen einige z.Zt. als singulär behandelte Worte in eine Serie einreihen, wie ich dies für Mattole vermute, im Prinzip dürfte sich dabei wenig ändern.

Wir wenden uns den 1-Gebiet-Elementen zu. Die S-Elemente sind über die 5 Sprachen der Süd-Gruppe ziemlich gleichmässig verteilt. Dagegen häufen sich die N-Elemente bei Kutchin und Hare. Tatsächlich sind 6 von ihnen auf diese beiden Sprachen beschränkt, 4 weitere sind zusätzlich noch für Chipewayan belegt. Nur 1 Element tritt bei allen 6 Sprachen der Gruppe auf, während von den 12 S-Elementen 6 bei allen 5 Süd-Sprachen vertreten sind. Die P-Elemente häufen sich bei Hupa und Mattole, Galice hat nur Spuren.

In den Tabellen 2a–c wurden die Übereinstimmungen der Sprachen je eines Gebietes an 1-Gebiet-Elementen dargestellt. Dabei bestätigt sich (2a) die innere Geschlossenheit der Süd-gruppe. In der Nordgruppe bilden Kutchin und Hare ein enggeschlossenes Paar, an das sich Chipewayan mit einigem Abstand anschliesst. In der Pazifischen Gruppe bilden Galice-Hupa-Mattole-Kato wie eine geographische, so auch eine Ähnlichkeits-Kette. Galice steht dabei erheblich weiter entfernt.

TABELLE 2: 1-Gebiet-Elemente

	Nav	Chi	SC	Jic	Li	
a.)						
Nav	(9)	8	7	8	7	
Chi	8	(10)	8	9	9	
SC	7	8	(8)	7	7	
Jic	8	9	7	(11)	10	
Li	7	9	7	10	(10)	
	Ku	Ha	Chip	Beav	Car	Sar
b.)						
Ku	(13)	11	5	1	3	1
Ha	11	(13)	5	2	2	2
Chip	5	5	(7)	2	1	2
Beav	1	2	2	(4)	1	1
Car	3	2	1	1	(5)	3
Sar	1	2	2	1	3	(5)
	Gal	Hup	Mat	Kat		
c.)						
Gal	(3)	3	1	1		
Hup	3	(10)	8	3		
Mat	1	8	(12)	7		
Kat	1	3	7	(7)		

Bei den 2-Gebiet-Elementen fällt der unterschiedliche Umfang der drei Teil-Kategorien auf. Neben nur 2 S-P-Elementen stehen 8 S-N- und 14 N-P-Elemente. Von den letzteren ist übrigens nicht ein einziges in seiner pazifischen Verbreitung auf Galice beschränkt. Das scheint mir eine Rechtfertigung für die Zuteilung von Galice zur Pazifischen Gruppe zu sein.

An 3-Gebeit-Elementen weist Navaho 53, Mattole nur 37 auf. Hier liegen die Verhältnisse umgekehrt, wie bei den singulären Elementen.

Von den 27 universalen Elementen sind bei Beaver 3, Galice 2, Carrier und Kato je 1 Element nicht belegt, aber wahrscheinlich vorhanden.

2. Universale Elemente, 3-Gebiet- und 2-Gebiet-Elemente können als Reflexe grundsprachlicher Worte gleicher Bedeutung angesehen werden. Auch bei den 1-Gebiet-Elementen, sogar bei den singulären Elementen, lässt sich die *Möglichkeit* einer grundsprachlichen Herkunft nicht ausschliessen, die überwiegende Wahrscheinlichkeit spricht aber in diesen Fällen für eine Neuerung des betreffenden Teilgebietes.

Demnach geben die Summen $S_{1\text{-}3}$ an, wieviele Elemente der einzelnen Sprache auf gleichbedeutende Worte der Grundsprache zurückgehen. Die Prozentwerte $p_{1\text{-}3}$ stellen die Erhaltungsrate der Einzelsprache dar. Sie schwanken zwischen 70% (Mattole) und 89% (Chiricahua, Chipewayan, Beaver). Wie ist dieser grosse Unterschied zu erklären?

Ich unterstelle, dass Fehler der Sprachvergleichung bei der Ermittlung der Cognaten nicht vorgekommen sind bzw. das Ergebnis nicht merklich beeinflusst haben. Dann aber scheint mir die einzig mögliche Erklärung die zu sein, dass die Erhaltungs-*wahrscheinlichkeit* für die 15 Sprachen nicht gleich, sondern verschieden gewesen ist. Dass nicht eine unterschiedliche "Zeittiefe" (bei konstanter Erhaltungs-Wahrscheinlichkeit) zur Erklärung herangezogen werden kann, scheint aus folgender Überlegung hervorzugehen:

Ein Vergleich der Summen $S_{1\text{-}3}$ mit den (in ihnen enthaltenen) Summen $S_{1\text{-}2}$ ergibt, dass die Unterschiede zwischen den Einzelsprachen von der gleichen Grössenordung sind, ob man nun die 2-Gebiet-Elemente hinzunimmt oder nicht. Die Differenz liegt also primär in den 3-Gebiet-Elementen. Diese *müssen* aber auf *eine* Grundsprache zurückgehen, von der sowohl die Süd- als die Nord- und die Pazifische Gruppe abstammen und von der alle 15 Sprachen den *gleichen* zeitlichen Abstand haben.

Es ist klar, dass die Annahme unterschiedlicher Erhaltungsneigungen für die Sprachen *einer* Sprachfamilie im Widerspruch zu einer grundsätzlichen Voraussetzung der Glottochronologie steht. Umso wichtiger ist es, zu prüfen, ob die beobachteten Differenzen statistisch gesichert in Bezug auf Stichprobenfehler sind. Wir erhalten als mittlere Erhaltungsrate $\bar{p}_{1\text{-}3} = 82.5\%$. Diesem Mittelwert und einem $n = 100$ entspricht ein Stichproblenfehler

$$\sigma_s = \sqrt{\frac{0.825 \cdot 0.175}{100}} = 3.8\%.$$

Die Differenz Chiricahua-Mattole mit 19.3 % ist also mehr als fünfmal so gross wie der Stichproblenfehler, die Wahrscheinlichkeit einer solchen Differenz kleiner als 0.001. Auch die Differenz Chiricahua-Hupa ist mit 14 % 3.7 mal so gross wie der Stichprobenfehler und damit statistisch gesichert. Der mittlere empirische Fehler σ_e ist 5.6 %.

3. Als nächsten Schritt ermitteln wir die Übereinstimmungen zwischen den Einzelsprachen hinsichtlich der Kategorien 1–3, also hinsichtlich des auf die Grundsprache zurückgeführten Sprachgutes (Tabelle 3). Die Absolutbeträge wurden sodann in Prozentwerte $q_{i,j}$ umgewandelt (Tabelle 4, obere Zahlen). Bei Durchsicht der Tab. 4 stellt man fest, dass in den Spalten derjenigen Sprachen, die einen hohen Wert von $p_{1\text{-}3}$ (hinfort kurz als p bezeichnet) aufwiesen, durchweg höhere Prozentsätze der Übereinstimmung auftreten, als in den Spalten der Sprachen mit niederem p. Da nach der Theorie der Glottochronologie $q_{i,j} = p_i p_j$ sein soll, lag der Versuch nahe, die $q_{i,j}$ als Produkte der in Tab. 1 ermittelten p_i bzw. p_j darzustellen. Die Durchführung dieses Gedankens erbrachte nur zum Teil ein befriedigendes Resultat. Zwar die Grössenordnung der $q_{i,j}$ wurde richtig getroffen, jedoch waren bei einigen Sprachen (Chipewayan, Kato) die $q_{i,j}$ *durchweg* kleiner als Produkte $p_{i,j}$, bei anderen Sprachen (Kutchin, Mattole) *durchweg* grösser.

Es wurde daher ein anderer Weg beschritten, der ein formales Analogon zur Faktoren-Analyse darstellt. Wir definieren N Faktoren p_i' durch die N Gleichungen

$$p_i' \sum_j^N p_j' = \sum_j^N q_{i,j} \qquad (1)$$

Dann ist die Doppelsumme

$$\sum_i^N p_i' \sum_j^N p_j' = \left(\sum_i^N p_j'\right)^2 = \sum_i^N \sum_j^N q_{i,j}, \quad \text{und} \qquad (2)$$

$$\sum_j^N p_j' = \sqrt{\sum_i^N \sum_j^N q_{i,j}}.$$

Durch Einsetzen in Gl. 1 erhalten wir

$$p_i' \sqrt{\sum_i^N \sum_j^N q_{i,j}} = \sum_j^N q_{i,j}, \quad \text{oder} \qquad (3)$$

$$p_i' = \frac{\sum_i^N q_{i,j}}{\sqrt{\sum_i^N \sum_j^N q_{i,j}}}. \qquad (4)$$

TABELLE 3: Übereinstimmungen in Proto-Athapaskischen Elementen

	Nav	Chi	SC	Jic	Li	Ku	Ha	Chip	Beav	Car	Sar	Gal	Hup	Mat	Kat
Nav	(88)	86	81	81	80	70	69	77	62	72	67	64	64	63	64
Chi	86	(89)	83	83	82	71	72	76	62	71	67	65	64	64	63
SC	81	83	(85)	80	77	66	68	72	58	68	64	64	61	62	62
Jic	81	83	80	(85)	81	67	68	74	59	69	67	62	63	63	61
Li	80	82	77	81	(86)	66	68	74	58	70	65	62	60	61	60
Ku	70	71	66	67	66	(76)	70	72	59	67	63	58	60	58	61
Ha	69	72	68	68	68	70	(80)	71	61	68	65	60	62	61	61
Chip	77	76	72	74	74	72	71	(89)	65	76	73	66	67	61	67
Beav	62	62	58	59	58	59	61	65	(73)	59	63	61	56	52	58
Car	72	71	68	69	70	67	68	76	59	(81)	68	63	66	61	61
Sar	67	67	64	67	65	63	65	73	63	68	(77)	62	61	60	60
Gal	64	65	64	62	62	58	60	66	61	63	62	(75)	59	57	61
Hup	64	64	61	63	60	60	62	67	56	66	61	59	(75)	58	60
Mat	63	64	62	63	61	58	61	61	52	61	60	57	58	(69)	58
Kat	64	63	62	61	60	61	61	67	58	61	60	61	60	58	(77)

TABELLE 4

	Nav	Chi	SC	Jic	Li	Ku	Ha	Chip	Beav	Car	Sar	Gal	Hup	Mat	Kat
	774	860	810	810	800	700	690	770	756	728	677	720	640	636	681
Nav	783	790	755	763	754	703	720	779	781	737	708	749	667	650	710
	−9	70	55	47	46	−3	−30	−9	−25	−9	−31	−29	−27	−14	−29
	860	792	830	830	820	710	720	760	756	717	677	731	640	640	670
Chi	790	797	762	770	761	709	726	786	789	744	714	755	673	656	716
	70	−5	68	60	59	1	−6	−26	−33	−27	−37	−24	−33	−16	−46
	810	830	723	800	770	660	680	720	707	687	646	720	610	626	660
SC	755	762	728	735	727	677	693	751	753	711	682	722	643	627	684
	55	68	−5	65	43	−17	−13	−31	−46	−24	−36	−2	−33	−1	−24
	810	830	800	723	810	670	680	740	720	697	677	697	630	636	649
Jic	763	770	735	743	734	684	701	759	761	718	690	729	650	634	691
	47	60	65	−20	76	−14	−21	−19	−41	−21	−13	−32	−20	2	−42
	800	820	770	810	740	660	680	740	707	707	657	697	600	616	638
Li	754	761	727	734	726	676	693	750	752	710	682	721	642	626	683
	46	59	43	76	14	−16	−13	−10	−45	−3	−25	−24	−42	−10	−45
	700	710	660	670	660	578	700	720	720	677	636	652	600	586	649
Ku	703	709	677	684	676	630	646	699	701	661	635	672	599	584	637
	−3	1	−17	−14	−16	−52	54	21	19	16	1	−20	1	2	12
	690	720	680	680	680	700	640	710	743	687	657	675	630	616	649
Ha	720	726	693	701	693	646	661	715	718	677	650	688	613	598	652
	−30	−6	−13	−21	−13	54	−21	−5	25	10	7	−13	17	18	−3
	770	760	720	740	740	720	710	792	793	768	737	742	670	616	713
Chip	779	786	751	759	750	699	715	774	777	733	704	744	664	647	706
	−9	−26	−31	−19	−10	21	−5	18	16	35	33	−2	6	−31	7
	756	756	707	720	707	720	743	793	792	720	768	782	683	635	744
Beav	781	789	753	761	752	701	718	777	780	736	706	747	666	649	708
	−25	−33	−46	−41	−45	19	25	16	12	−16	62	35	17	−14	36
	728	717	687	697	707	677	687	768	720	669	695	707	657	622	656
Car	737	744	711	718	710	661	677	733	736	694	666	705	628	612	668
	−9	−27	−24	−21	−3	16	10	35	−16	−25	29	2	29	10	−12
	677	677	646	677	657	636	657	737	768	695	605	697	606	612	645
Sar	708	714	682	690	682	635	650	704	706	666	640	677	603	588	642
	−31	−37	−36	−13	−25	1	7	33	62	29	−35	20	3	24	3
	720	731	720	697	697	652	675	742	782	707	697	711	663	647	706
Gal	749	755	722	729	721	672	688	744	747	705	677	716	638	622	678
	−29	−24	−2	−32	−24	−20	−13	−2	35	2	20	−5	25	25	48
	640	640	610	630	600	606	630	670	683	657	606	663	563	586	639
Hup	667	673	643	650	642	599	613	664	666	628	603	638	569	554	606
	−27	−33	−33	−20	−42	1	17	6	17	29	3	25	−6	32	34
	636	640	626	636	616	586	616	616	635	622	612	647	586	486	623
Mat	650	656	627	634	626	584	598	647	649	612	588	622	554	540	589
	−14	−16	−1	2	−10	2	18	−31	−14	10	24	25	32	−54	34
	681	670	660	649	638	649	649	713	744	656	645	726	639	623	671
Kat	710	716	684	691	683	637	652	706	708	668	642	678	605	589	643
	−29	−46	−24	−42	−45	12	−3	7	36	−12	3	48	34	34	28
Summe	11.062	11.153	10.649	10.769	10.642	9.918	10.147	10.991	11.026	10.404	9.992	10.567	9.417	9.183	10.013
Pi	.885	.893	.853	.862	.852	.794	.813	.880	.883	.833	.800	.846	.754	.735	.802

.869 .834 .784

.832

TABELLE 5

	Nav	Chi	SC	Jic	Li	Ku	Ha	Chip	Be	Car	Sar	Gal	Hup	Mat	Kat	Mittel
p_i'	885	893	853	862	852	794	813	880	883	833	800	846	754	735	802	832
p_i	880	890	850	850	860	760	800	890	890	818	778	843	750	697	819	825
D	+5	+3	+3	+12	−8	+34	+13	−10	−7	+15	+22	+3	+4	+38	−17	+7.

Bezogen auf Tabelle 4 sind die $\sum_j^N q_{i,j}$ die Spaltensummen (der oberen Zahlen), $\sqrt{\sum_i^N \sum_j^N q_{i,j}}$ ist die Quadratwurzel aus der Summe der Spaltensummen. (In die Diagonale der Tabelle wurden zuvor die Quadrate p_i^2 (nach Tabelle 1) als Näherungswerte der gesuchten Quadrate $p_i'^2$ eingesetzt.) Die so ermittelten Werte der p_i' sind jeweils am Fusse der zugehörigen senkrechten Spalte in Tabelle 4 eingetragen. Um den Vergleich mit den p_i zu erleichtern, wiederholen wir beide Wertreihen (Tab. 5): und bilden gleichzeitig ihre Differenz:

Die p_i' sind im Mittel 0.7 % grösser als die p_i. In sieben Fällen sind die Differenzen kleiner als 1 %, in weiteren fünf kleiner als 2 %. Nur in drei Fällen (Sarcee 2.2 %, Kutchin 3.4 %, Mattole 3.8 %) sind grössere Abweichungen festzustellen, und zwar stets im positiven Sinne. Die Rangordnung der Einzelwerte ist durchweg die gleiche, der Spearmansche Koeffizient ρ ist gleich 0.955.

Diese Feststellungen berechtigen zu der Annahme, dass die p_i' mit den p_i eng zusammenhängen. Ich betrachte sie als "wirksame Erhaltungsprozentsätze". Sie unterscheiden sich von den ausgezählten Prozentsätzen (p_i) deshalb, weil die Cognaten nicht nach dem Binominalgesetz über die verschiedenen Frequenzen verteilt sind. Wie eine Auszählung ergab, besteht ein starker Überschuss an Cognaten mit universaler und fast-universaler Verbreitung, ein Defizit im Bereiche des theoretischen Gipfels (12–13 Sprachen) und ein erneuter Überschuss bei den Cognaten mit beschränkter Verbreitung.

Es wurden nun sämtliche Produkte $p_i'p_j'$ gebildet. Sie sind in Tabelle 4 (mittlere Zahlen) aufgeführt. Darunter erscheinen jeweils die Differenzen ($q_{i,j} - p_i'p_j'$). Wenn wir von den Werten entlang der Diagonale (d.h. ($p_ip_i - p_i'p_i'$)) absehen, so ergeben diese Differenzen ein sehr charakteristisches Bild. Zwischen den Sprachen der Südgruppe treten nur positive Werte auf, ebenso innerhalb der Pazifischen Gruppe. Innerhalb der Nordgruppe und im Verhältnis Nordgruppe-Pazifische Gruppe überwiegen die positiven Werte. Dagegen sind Südgruppe-Nordgruppe und Südgruppe-Pazifische Gruppe bis auf je eine einzige Ausnahme durch negative Werte der Differenz gekennzeichnet. Dies tritt in Tabelle 6 noch deutlicher hervor, in der die Mittelwerte innerhalb und zwischen den Gruppen eingetragen sind:

Die prozentualen Übereinstimmungen innerhalb der drei Gruppen und zwischen Nordgruppe und Pazifischer Gruppe sind also grösser, zwischen der Südgruppe und den beiden anderen Gruppen kleiner, als nach den "wirksamen Erhaltungsprozentsätzen" zu erwarten wäre.

Es erhebt sich nun die Frage, wie gross die prozentualen Übereinstimmungen sein würden, wenn für alle Sprachen die gleiche Erhaltungswahrscheinlichkeit gültig wäre und alle Sprachen die gleiche wirksame Erhaltungsrate, nämlich $\bar{p}' = 83.2\%$ aufwiesen. Zur Beantwortung dieser Frage müssen wir auf die Theorie der Erhaltungswahrscheinlichkeit zurückgreifen. Danach wäre $\ln p_i' = -k_i t$ und $\ln q_{i,j} = (k_i + k_j)t$ (in erster Näherung). Wir definieren nun den auf gleiche Erhaltungswahrscheinlichkeiten reduzierten Wert

$$\ln Q_{i,j} = \ln q_{i,j} \frac{2\,k_m\,t}{(k_i + k_j)t} = \ln q_{i,j} \frac{2 \ln p'}{\ln (p_i' p_j')},$$

wofür wir zur Erleichterung der praktischen Rechnung auch unter Benutzung der dekadischen Logarithmen schreiben können

$$\log Q_{i,j} = \log q_{i,j} \frac{2 \log \bar{p}'}{\log (p_i' p_j')}.$$

Dieses Verfahren wurde auf die Mittelwerte der Tab. 6 angewandt und ergab die in Tab. 7 verzeichneten Resultate. Wende ich auf diese Prozentsätze die Erhaltungsrate je 1000 Jahre von 86 % an, so resultieren folgende virtuelle Zeittiefen (Tab. 8). Von einer Korrektur dieser virtuellen (scheinbaren) Zeittiefen entsprechend den früher (Milke 1955: 41 ff.) entwickelten Gesichtspunkten, wozu vor allem die Ausschaltung des Einflusses der räumlichen Nachbarschaft gehört, sei hier abgesehen, zumal alle "Zeittiefen" problematisch erscheinen müssen, wenn einmal das Postulat der konstanten Erhaltungswahrscheinlichkeit aufgegeben ist. Ich begnüge mich mit dem Hinweis, dass die reduzierten Prozentwerte für das Verhältnis zwischen den Gruppen genau das Gegenteil besagen wie die unreduzierten Werte und von einem historisch-geographischen Standpunkt aus wesentlich plausibler erscheinen. Während nach den unreduzierten Werten die Sprachen der Pazifischen Gruppe *untereinander* unähnlicher sind, als gegenüber den Süd- und den Nordsprachen, lassen die reduzierten Werte die Pazifische Gruppe durchaus normal erscheinen. Ebenso scheint es plausibel, dass die Ähnlichkeit zwischen Pazifischen und Nordsprachen grösser ist als die zwischen Pazifischen und Südsprachen.

TABELLE 6

	Süd	Nord	Pazifisch
Süd	.8140		
	.7551		
	+.0589		
Nord	.7032	.7153	
	.7246	.6949	
	−.0214	+.0204	
Pazifisch	.6569	.6602	.6473
	.6813	.6500	.6143
	−.0244	+.0102	+.0330

TABELLE 7

	Süd	Nord	Pazifisch
Süd	.762		
Nord	.668	.711	
Pazifisch	.667	.700	.718

TABELLE 8

	Süd	Nord	Pazifisch
Süd	890		
Nord	1330	1120	
Pazifisch	1332	1170	1090

Literatur

Hoijer, H., 1956: The chronology of the Athapaskan languages. IJAL 22: 219–32.

Hymes, D. H., 1957: A note on Athapaskan Glottochronology. IJAL 23: 291–97.

Kroeber, A. L., o. J.: Bemerkungen zu Hoijer 1956.

Milke, W., 1955: Theorie der kulturellen Ähnlichkeit. Geseke i. Westf.

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Prefix Pluralizers in Delaware

A. E. Meeussen

In his description of Delaware, Voegelin[1] gives the following prefix pluralizers: 1st pers. pl. na[·n], with by-form e·n; 2nd and 3rd pers. pl. wa[·w], mo and e·yo. On the basis of the material given by the author it seems possible to reduce the first two to a morpheme -na[·n], and the last three to a morpheme -wa[·w].

The form mo appears in the independent mode of animate verbs—transitive without a reference to third person: ku·lhaləlúhumo *I keep you* (pl.) and ku·lhalíhimo *you (pl.) keep me*, and intransitive: kəlu·síhimo *you*

[1] C. F. Voegelin, Delaware, an Eastern Algonquian Language, in LSNA, VFPA 6, 130–157. Square brackets indicate segments which are not represented in word final. The morphemic forms wəlah-l- *keep* and -kətkw- *knee* are provisional approximations.

(*pl.*) *are burning*. In all these cases mo is preceded by a two morae interrupted syllable: uhu, ihi; compare the corresponding forms without mo: ku·lhálәl (final u absent) *I keep you* (*sg.*), ku·lháli *you* (*sg.*) *keep me*, kәlú·si *you* (*sg.*) *are burning*.

This is one way of analyzing the sequences íhimo, úhumo (and similarly éhemo, áhamo, óhomo); another analysis is suggested by some themes which have a final in m or in underlying w. Here mo is preceded by an element hu: ku·takaʀakwtәкi·húmo *no, you* (*pl.*) *don't want to go back*. This element in turn alternates with hum: ku·taki·lú·na kaʀakwtәкi·húmәna *not us, we don't want to go back*, with (connecting ә and) na[·n]. Analyzing húmәna as -hum-na[·n] leads one to regard húmo as -hum-wa[·w], with a rather normal treatment of m-w and C-wa; cp. kahtunkó·mu·k *they are sleepy* with -unko·m-w-ak, kwátko *his knee*(*s*) with -kәtkw-a, and entawәlálkon *when you are kept by him/them* with -әkw-an. Similarly, kәlu·síhimo *you are burning* can be viewed as kә-lu·s-i-hum-wa[·w], provided the following morphophonemic rule: final theme vowel is short and stressed before -hum-, which in turn is represented with the same vowel as the theme final (instead of u); by the same rule ku·lhalíhimo can be viewed as kә-wәlah-l-i·hum-wa[·w]. We can account similarly for ku·lhalíhina *you keep us* if we add one more morphophonemic rule: in the same unstressed postvocalic position -hum- appears without m before -na[·n], which allows us to analyze the form as kә-wәlah-l-i·hum-na[·n].

The forms e·n and e·yo are used in two cases: in transitive inanimate (independent mode), which has a theme ending in n (tu·n, tamәn, amәn, etc.), and in secondary paradigms after directive predicator n. In both cases e·n and e·yo are thus preceded by n: nkwihilu·tamáne·n *we ran after it*, wәlu·sәmәné·yo *they burn the thing*(*s*), ki·lu·wa ktәliwәlahali·né·yo *you* (*pl.*) *you indeed kept me*. A final segment e·yo in many cases represents -e·-w-a (ní·ske·w *it is dirty*, ni·ské·yo *they are dirty*), so that here also we can separate off e· and wa[·w]; this leaves us with the vowel e· either as a separate morpheme or as part of a morpheme. Since e· is always preceded by n, which appears as such in word final (wәlú·sәmәn *he burns it*) and before -a (wәlu·sәmána *he burns the things*), nothing would prevent us from setting up n[e·], if the following two morphophonemic rules can be accepted: (1) -n[e·]-a appears as na (instead of the expected *ne·ya), (2) -n[e·]-na[·n] is represented as ne·n (instead of the expected *ne·na). The suggested analysis of such final segments, then, is as follows: әmәn: -әm-n[e·]; әmәna: -әm-n[e·]-a; әmәne·n: -әm-n[e·]-na[·n]; әmәne·yo: -әm-n[e·]-wa[·w]; i·ne·yo: -i·-n[e·]-wa[·w], etc.

We were led to set up -n[e·] both as transitive inanimate ending and as directive predicator; this ambivalent value ascribed to one morpheme should account for the fact that transitive inanimate verbs do not seem to combine with directive predicator. Forms with (n)e·n and (n)e·yo are the same for singular and plural object; this we can render by a morphological rule: no suffix pluralizer (-a) follows after a prefix pluralizer preceded by -n[e·].

As a result we have a shorter series of morphemes: -na[·n], -wa[·w], -hum-, in[e·]; a number of morpheme alternants can be dispensed with: -hu-, -әn, -n, -e·n, -e·yo, -mo, and two morae interrupted syllable. On the other hand, we had to set up at least four new morphophonemic rules: post-vocalic -hum- has complete vowel harmony, and moreover it has non-representation of m before -na[·n]; -n[e·]-na[·n] appears as ne·n, and -n[e·]-a as na.

If this approach is acceptable, the question will be to see whether it remains valid in the face of fuller data about Delaware.

MUSÉE ROYAL DE CONGO BELGE

ALGONQUIAN CLUSTERS WITH GLOTTAL STOP

A. E. MEEUSSEN

Some PA reconstructions with clusters ?t, ?θ, ?š, ?l can be analyzed directly or indi-

rectly to the effect that the obscure first element of the cluster (Bloomfield, VFPA 6. 88) is readily re-interpreted as one of the ordinary (phonemes or) morphophonemes.

1. If *šii?šiipa *duck* has root reduplication (Bloomfield, VFPA 6. 122), then the obvious morphophonemic analysis is *šiip-šiip-a, with the sequence *p-š represented as *?š.

2. If we apply a formally comparable analysis to *ko?θeewa *he fears him* and *ko?tamwa *he fears it*, we have *kop-θ-ee-w-a and *kop-t-am-w-a, with a root morpheme *kop- *fear*. This is attested in Blackfoot kóput *be afraid* (imper.), nitáikòp *I am afraid*, áikòpum *he is afraid* (Uhlenbeck *Gr.* 194).

3. Beside tr. an. *a?leewa *he places him*, tr. in. *a?taawa *he places it, has it* and in. intr. *a?teeki *when it is there*, there is an. intr. *apiwa *he is in place, he sits*, which is said to be suppletive to the first three (Bloomfield 109). But if we apply the same analysis, then instead of suppletion we obtain a full set of four primary derivatives from one root:

*ap-i-w-a	*ap-t-ee-k-i
*ap-l-ee-w-a	*ap-t-aa-w-a

4. Beside intr. an. *nenepe *I die*, *nepwa *he dies*, *nepeke *if he dies*, all three with stem *nepe-, there are tr. an. *ne?θeewa *he kills him* and tr. in. *ne?taawa *he kills it*. Here again, if we analyze the last two on analogy of the preceding cases as *nep-θ-ee-w-a and *nep-t-aa-w-a, they can be viewed as causatives to *nep-e-. Compare *pyeewa *he comes* and *pyeeθeewa *he brings him*, *pyeetaawa *he brings it*. This is not an exact parallel, however, since the derivation is secondary in the second case, whereas in the first it would rather be primary.

Even accepting as a working hypothesis that *?C represents *p-C in the case of the roots *šiip-, *kop-, *ap-, *nep-, one should allow for other possibilities in other cases, e.g. *?t representing *k-t, not *p-t (compare *ne?taasehkaweeha *he comes to him relieving his loneliness* and *nekotwi *one?*).

It would be interesting to see whether the analysis presented here can be applied to all or some of the present-day Algonquian languages.

MUSÉE ROYAL DU CONGO BELGE

MORPHEME MERGERS IN ISLAND CARIB

DOUGLAS TAYLOR

Morphemes, like phonemes, may split (*flour*, *flower*; *person*, *parson*) or fall together (as OE -endę of the present participle with -ung or -ing of the verbal noun in modern *-ing*); but it is not always easy to decide when the process is complete. As Nida recently pointed out (IJAL 24.280), the average speaker of English does not distinguish the *by* of *by-law* from that of *by-way*, etc.; and it is hardly surprising if for many the word *belfry* should contain *bell* and *handiwork* contain *handy*, or if an *ear* (*of corn*) be conceived as an extension of the name for the organ of hearing in the same way that the *eye* (*of a needle*) is an extension of the name for the organ of sight. We should expect such splits and mergers to be especially common in languages without a long literary tradition and an etymological spelling; but the investigator of an exotic language rarely has the means of discovering those that are already accomplished, and often tends to be arbitrary about others that are still incomplete. In what follows, I shall mention a few instances, taken from Island Carib, of homophonous morphemes that are identified by some (probably most) native speakers, but whose ancestry appears to be divergent.

The collective' suffix -gu (322; numbers refer to the list in IJAL 22.3–4) was so called by me because it occasionally contrasts, in what seems to be its main function, with the nominal pluralizer -ię ∽ ią ∽ -ių ∽ -nų (108), as in the case of nĺbirigu *my younger siblings* and nibírię *my younger brothers*, from nĺbiri *my younger brother*. Moreover, it may, unlike the latter, occur with nouns denoting inanimate objects, as

in numégegu *my (personal) belongings*; and in at least one instance both suffixes appear to combine: nibą́iagu *my grandchildren as a collectivity*, from nibą́ią *my grandchildren*, plural of nibári *my grandchild*. In such cases, -gu almost certainly derives from a Cariban pluralizer like -kon of modern Karina. On the other hand, it seems decidedly odd that a 'collectivizer' should modify the meaning of -agóburi *decrepitude* to the extent that appears in -agóburigu *parents* (v. IJAL 22.37); yet my informants could offer neither parallel nor explanation for this 'extended meaning'. Nevertheless it is plausible to suppose that -gu of this last example was once a 'suffix of respect' distinct from collective -gu, as is -ko (-ku, etc.) of Karina and of several other modern Cariban languages. The Black Carib of Central America today refer to themselves and their language as Garífuna, and to the 'family' of Carib nations as Garínagu; and there can be no doubt that the latter term, though now a primary word, has acquired a collective connotation. Yet Breton's "Callíponam" and "Callínago" of the 17th-century Dominican dialect are given as synonyms, belonging respectively to the women's speech and to that of the men; the latter having "callinágoyum *Caraïbes*" as plural. Plural and collective suffixes may, as we have seen (nibą́iagu), combine in this language; but the apparently reversed order in "callinágoyum" is an inexplicable anomaly, unless, as I believe, we are here dealing with a different combination: that of markers of respect (honorific) and plurality.

Dominican anísiku *wit, wisdom, intelligence* (whence kanísiku *wise*, manísiku *foolish*, etc.) is an obvious derivative of the same dialect's anísi *heart, mind*—with which compare recent Vincentian aníci and modern Central American anígi with the same meanings. Its equivalent in the last of these dialects, anícigu (whence ganícigu, manícigu, etc.), though less obvious, is generally acknowledged by native speakers to contain a variant of anígi together with 'collective' -gu. But here the latter's function differs from those previously mentioned; and is similar to that (or those) seen in derived adjectival particles like: dfligu *coldish* from dfli *cold*, háragu *generally hot*, or *'heaty'* (informant's translation, equivalent to some extended meanings of Eng. hot, as in reference to sex, music, etc.) from hára *hot*, hísięgu *lovable* from hísię *beloved* and mérẹgu *easy* from mérẹ *weak*.[1] Moreover, it is not unlike the apparent function(s) of Lokono (True Arawak) -ko (or -ku?) as seen in akosako *seam* from akosa *to sew, needle* (Sp. aguja), ieniko *cleverness, subtlety, wisdom* (whence kaieniko *clever*, maieniko *stupid*, etc.) from ieni-hi *song* (and perhaps formerly *tongue*, which now is ie-hi) and mariko *able* (cf. amarikota *to teach*—i.e., *cause to be able*) from mari *possible* (cf. amarita *to make, to do*). On the other hand, this latter usage of Island-Carib -gu does at least carry with it, in most cases, the collective connotation *as a whole* (v. IJAL 22.5, 13), which seems to be absent from that of the Lokono forms I have been able to find. Here again there may well have been some convergence of what once at any rate were distinct suffixes.[2]

Except perhaps for the first variant, the

[1] The translations of hísięgu and hísię as *lovable* and *beloved* might give a false idea of the function of -gu in the former. Both words are adjectival particles whose lexical meaning is indifferently *liked* or *loved*; but whereas the first (with -gu) is predicative of a general quality, the latter is employed only of personal predilection; so, in verbalized forms: hísięgugíru *she is still liked/loved*, but hísięgiru nų *I still like/love her* (more lit., *she-is-still-liked/loved by-me*).

[2] The anonymous, 18th-century Herrnhuter author (Schumann?) of the Grammatik der Arawakischen Sprache (in BLA VIII, Paris 1882) says that the function of -ku (written -ko by later authors) was to "intensiren oder erhöhen die Bedeutung des Wortes" to which it was suffixed. But the label 'intensifier', as applied to the Lokono examples of its use cited in this paragraph, seems hardly more apt than does my own 'collectivizer' as applied to -ku and -gu of the Island-Carib examples given in the same place. Perhaps also Lokono has two or more such homophonous suffixes.

nominal pluralizer -ię ∽ -ią ∽ -ių ∽ -nų (108) is homophonous with the suffix (107) marking 3rd person animate plural in verbs and locators. So far as I know, Lokono has -no, -na and -ie with similar functions and distribution (except that plural forms are used only in reference to human beings; whereas in Island Carib they may be used also in reference to other animals). On the other hand, -y-amo, -amo, -am, -em, -um, -an, etc. are said to be pluralizers of modern Cariban languages, employed with "les noms, démonstratifs et interrogatifs indiquant un être humain ou un animal, ou un génie" (De Goeje, Études linguistiques caribes II, p. 42; and v. also Lucien Adam, Matériaux...grammaire comparée de la famille caribe, p. 8). In this case, a 'fusion' of Cariban with indigenous Arawakan morphemes seems to have probably taken place.

Dominican káirabu *leeward* (= *side of an island protected from the prevailing wind*; cf. Fr. basse-terre) is clearly a compound containing variants of akáira *island, country* and *-ábu*, a nominal stem meaning, in this case, *under*; both members being Arawakan. On the other hand, bátibu *at (the) hut(s)* from báti *hut(s)*, béiabu *at the landing-place* and máinabu *in the garden* (= *plantation, clearing*) of the same dialect are complex words containing a locative suffix -bu of Cariban ancestry. Understandably, I recorded no equivalent of the first of these words (káirabu) in Central America, whose dialect has, however, agáira *country* and the other forms cited above. In this dialect the suffix -bu also occurs in áudobu *in, at or to town* from áudo *town*, bénabu *at (the) door* from béna *door*, bórorobu *in the court-yard* from bóroro *court-yard* and probably elsewhere; but it is certainly unproductive at the present time, and apparently tends to become inseparable from forms containing it. So, while máinabu and especially béiabu are in constant everyday use, máina *garden* was obtained only by eliciting, and béia- *landing-place* was not even so admitted as a current free form. All stems with which the occurrence of this suffix is clearly attested are of Cariban ancestry; but it may well be that analogy between such forms as náibuga áudobu *I'm going to town* and náibuga árabu *I'm going to the bush* or, áubobugéęti sá? *is he/it (coming) from town?* and árabugéęti sá? *is he/it (coming) from the bush?*, indicates or has resulted in the native speaker's ascription of locative -bu to words like árabu *bush* (earlier *forest*), *in or to the bush*, and áriabu *night, at night*. But etymologically these words were compounds, as -úrugu *interior* + -ábu > -urúgabu *close to/by* still is, the first containing (as does also earlier árubána *tree-leaf*, with -urbána *leaf, liver, feather*) a cognate of Lokono ada *wood, stick(s), tree(s)*, and both containing -ábu *under, with (bearing, carrying, in possession of)*, etc. (v. IJAL 22.36), whose Lokono cognate, abo *with, by*, etc., also enters into composition, as in oniabo *water*—with which compare onikain *river* and the phrase oni kia *rain*, tobanabo (-obana *leaf*) *hut, shelter*.[3]

A linguist who chose to describe any variety of standard spoken English without the benefit of historically known facts concerning the language would doubtless find little difficulty in distinguishing the homophonous suffixes exemplified in *bony* and *baby*; but he might get into trouble over such words as *primary, army, many* and *tardy*. And here the 'average native speaker' could not help him; though he might suggest, wrongly, that the last of these words, being clearly related to the verb *retard*, must contain some suffix. A more or less arbitrary decision may be inevitable in such cases. So,

[3] Among the Black Carib of Central America, the central meaning of árabu (earlier arábu) seems to have shifted from *forest or bush* to *cultivated clearing in the forest or bush*. Similarly, the Taino word for *cultivated field*, recorded and adopted into Antillean Spanish as conuco, is clearly cognate with modern Lokono konoko *forest* and modern Goajiro unuʔu *tree(s)*, and must once have had much the same meaning. If I am right in believing also áriabu (Dominican ariábu) to have been a compound, its first member may have been cognate with Goajiro aih < ali *night* and with ori- of Lokono orikahu *night*.

in the Central American dialect of Island Carib, the suffixes -ni ∽ -ne ∽ -ę ∽ -V̨ (-NE, 211), -li ∽ -le (-LE, 212) and -ri ∼ -re (-RE, 213) all occur, unpredictable variants: (1) as nominalizers, and (2) as nominal suffixes having, apparently, more than one function each (v. IJAL 22.7, 8, 11, 13, 33-4). Only the first of these three is productive; and I believe that my identification of the various forms and functions symbolized as '-NE' is in accordance with native Sprachgefühl, which is, however, more or less 'neutral' as regards the other two hypothesized units (always -li and -ri except in songs and ceremonial speech, and in some primary words where these morphemes' presence can be suspected only). It will suffice here to present the case for -RE.

A nominalizing suffix -ri occurs with some adjectival bases, as in ubuíduri *darling, favourite* (cf. ubuíduni *goodness, prettiness, friendship or intimacy*) from buídu *good, pretty* (of Cariban ancestry), and in gaiúnari *ancestral-cult house* from gaiúna *ancestral* (which is Arawakan), an attributive denominal adjective containing the base -iúna *stem, ancestor*. In númari *my companion, my consort* (socially sanctioned, legal or extralegal mate; Breton does not give the latter referent, which is today the more common), linguist and native speaker alike see a derivative of núma *accompanying me, together with me*, itself a noun by morphological criteria. A nominal suffix -ri also occurs with nouns of Cariban ancestry, with what may be called a 'subordinative' function, to form stems and bases of possessed nouns, attributive and privative denominal adjectives, and derivatives of these classes, like: némari *my path* from óma *path or road*, tidúnari *its/her river* from dúna *water or river*, ka idúnari *whose river*, madúnari(tu) *(it is) without water*. Like all privative and attributive denominal constructions, this last word has an Arawakan prefix (privative MA-, 22); but 'subordinative' -ri, like all stems and bases with which it is found, is certainly of Cariban ancestry (cf. modern Karina oma *path*, yemarī *my path*, emarī *his/her/its path*, maina emarī *garden path*—i.e., *the path to the garden*).[4]

The same cannot be said of -ri in úmari *companion, consort* (with bound stem -uma- *accompanying, together with*), which shows neither possession nor any other kind of grammatical subordination so far as I can see, and whose stem is Arawakan (cf. Lokono -oma- with the same meaning). Now Island-Carib /r/ corresponds to either /r/ or /d/ of Lokono; and de Goeje tells us that Lokono -ri "forms substantives," without, unfortunately, giving any clear illustration of such formations. On the other hand, Lokono toboradi *her elder (brother), he who is before her*, from tobora *before her/it*, and tadikidi *her younger (brother), he who is after her*, from tadiki *after her/it*, contain stems that are surely cognate with Island-Carib -ubára *before (place or time)* and -árigi *after*, and would be in every way analogous to Island-Carib túmari *her companion, her consort*, from túma *together with her*, if only *companion* were qualified as *male*, and one might translate: *he who is together with her*. For the Lokono suffixes -di, -do are complex, containing -i *he (human male)* vs. -o *she or it (woman, god, beast, plant or inanimate object)*, which correspond to Island-Carib -i *he or it (masculine)* vs. -u *she or it (feminine)*. But Breton, though he lists a perfective verb: "*elle est à moi* nománharou" (more literally *she has become mine*), said of a female slave, gives no feminine counterpart of "nómari *mon compagnon*"; and, as we have seen, úmari now contains no reference to sex or gender except, of course, in so far as túmari may usually be translated by *her husband*, lúmari by *his wife*.

However, it is not surprising that this -ri, should it be cognate with Lokono -di, has shed any reference it may once have had to sex or gender; for the gender of an Island-Carib noun is indicated, today as three hundred years ago, only by 3rd sg. pro-

[4] For this and much other information on modern Karina I am grateful to B. J. Hoff.

nominal reference in another word (noun, verb, or locator). Thus, tebéneri lúbą *her-door his-house* (*the door of his house*) indicates the feminine gender of lúbą by t- in the first word, the owner's male sex by l- in the second, but says nothing about the masculine gender of béna *door*, tebéneri *her door*. It is true that some nouns denoting specifically male or female persons show, as final /i/ vs. /u/ or /o/, non-functional vestiges of what appears to have been a different system, partially retained in Lokono; so, compare: eiéri *man* and hiáru *woman*, núguci(li) *my father* and núgucu(ru) *my mother*, náruguti *my grandfather* and nagóto *my grandmother*, náti *my elder brother* and nítu *my elder sister*. But apart from the forms in parentheses, which occur with no nominal stems other than those meaning *father* and *mother* as cited, and with them only in ceremonial speech today, none of these words contains—or contained in Breton's time—any suffix whatever.[5]

Also as a nominalizer, -ri most likely has a dual descent, so to speak; for ubuíduri *darling*, etc. was probably borrowed from Karina as a possessed noun, ibágari *life* (and earlier *release, awakening*) and igáburi *conduct* (*behaviour*), *way of doing things* as verbal nouns containing a Cariban suffix homophonous if not identical with 'subordinative' -ri. But if de Goeje was right in believing that Island-Carib -ſbiri (a homonym of ſbiri *younger brother*, which is Cariban) *half or part* (*of some thing, things or beings*) is cognate with Lokono ibili *small human male* (*person*), from ibi- *small*, then Island-Carib gaiúnari *ancestral-cult house* and other similar formations on an indigenous Arawakan base may well contain what is historically the same suffix.[6]

As might be expected, some affixes of clearly Cariban ancestry, such as locative -da *in* (325), -ha *at, in* (326), -bu *at, to, in* (327), and 'subordinative' -ri (213), never became productive in Island Carib, and are found today only with stems that were likewise borrowed from Karina; whereas affixes belonging to the indigenous Arawakan language of these islands combine with inherited and with borrowed stems indifferently. However, I think that de Goeje was mistaken in making the unqualified statement: "On ne trouve jamais de sémantèmes d'origine iñeri unis à des morphèmes d'origine kaliña" (in *Journ. de la Soc. des Américanistes de Paris* XXXI.22). Island-Carib tſbegu *her kind* clearly contains the stem -ibe- *kind* (*natural group, race, variety, sort*) together with -gu in its strictly collective function; and the latter, as we have seen, is Cariban in ancestry. What I take to be the same stem is contained in the denominal, attributive and privative adjectives, gſbe (Dominican kſbe) *much, many* and mſbe *not much, few*. Both usages are made of a Lokono stem -ibe-, as in: t-ibe-n-ti *person of her company, sect, nation*, and k-ibe *abundant*; and I therefore conclude that

[5] As a nominalizing suffix, -li occurs in a number of nouns like: gumúlali *smoke* from gumúla *smoky* (cf. agúmulaha *to smoke*), garábali *breeze or wind* from garába *turning over* (*inverting, reversing*), and ganáli *foundation*, or (*kind of*) *earthenware jar or pitcher* from gana *holding up* (*supporting, checking or pausing in movement*). The unique occurrence of -li and -ru with what are now nominal stems (meaning *father* and *mother*), and the fact that these suffixes were never omitted from Dominican words like núkusili *my father*, núkusuru *my mother*, suggest that also here they were once nominalizers.

[6] These homonyms are distinguished in construction with UA- *our*, HA- *their*, GA- *having* or MA- *without* as in háibiri *their younger brother*, but hſibiri *half, a part or some of* (*animate*) *them*. The latter stem enters into a compound with ári *navel* to form aribiri *umbilical cord*. My data do not show any convincing example of the merging of major morphemes; but then, what C. F. Voegelin has called 'discontinuous meanings' belong not only to homonyms like ári *navel* and ári *tooth, teeth*, áti (*woman's*) *elder brother* and áti *capsicum*, -ſbiri (*man's*) *younger brother* and -ſbiri *part or half of*, but also to individual morphemes like arſgai (1) *ear*, (2) *corner* (*of a house*), égei (1) *shoulders*, (2) *grater-board*, and hſu (1) *thorn, prickle*, (2) *body-hair*, (3) *cassava-beer*.

Island-Carib -íbegu contains an Arawakan stem together with a borrowed, Cariban suffix.

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A POSSIBLE ARAWAK-CARIB BLEND

DOUGLAS TAYLOR

The 'semantic peculiarity' of the nominal stem -ísię *attraction exerted by (some being or thing on another's inclination)*, employed in expressions of love, liking or—with the privative prefix—dislike, has been described in section 3.1 of my outline of the modern Central American dialect of Island Carib (IJAL 22.5, 6). Here I wish to consider its ancestry, which may have its own peculiar interest.

Corresponding to attributive denominal hísię *attractive* of this dialect is what Raymond Breton, describing the Dominican dialect of circa 1650, wrote: "kinchim" (kínchim lahámouca hóne *il voudrait être aimé de vous*), "kinchin" (kínchin-lákia bóne *qu'il te soit cher*, kinchínti lóne *il l'aime*) or "kinchen" (lika kinchen náne *ce que je chéris*), and usually translated by *aimé* or *cher*. This form—and privative "minchínti lóne *il ne l'aime pas*" (equivalent to: mísięti lú of the C. A. dialect)—he ascribes to the 'women's speech'. Elsewhere he lists: ícheem *ce que j'aime*, nícheem bouca *ce que j'aimais*, lichiém-kia nóne *c'est que je l'aime* (more literally, *his-attraction it-is for-me*) and kinchínti nóne *je l'aime bien* (more lit., *il-est-aimé de-moi*); the last two entries both ending with the reference: "*voyez* chétina". Turning to the latter we find: "chétina, [or] chetímain nĩẽ, *j'aime*," "ouécou-cheti,...*un homme qui aime le vin*,..." (cf. C. A. uógu *cassava beer*), and elsewhere, "amon chéti *il en aime une autre*". Evidently Breton regarded all these forms as related; yet there appear to be three distinct bases, perhaps phonologically: -įsį or -įsę, -isęę or -isię and se- respectively, whose differences remain unexplained. The first two, whatever their status in Breton's day, were later merged as -isę (or -isen) in recent Dominican and Vincentian, and as -ísię (with stable stress) in the Central American dialect. The third would seem to be lost, unless it should be identified with the suffix -se in C. A. garíhase(ti) (*it is*) *worth seeing*, based on aríha *to see*, or be contained in nominal -ísebe *agreeableness*, whence C. A. hésebe(ti) (*it is*) *agreeable, pleasant, likeable* (*of a place*) and Breton's kechébeti *il est bien privé, familier, il se plaît*, which he ascribes to the 'women's speech'.[1]

Comparable with Breton's Island-Carib "kinchin" and "minchin" are Lokono "kanissin *lieben*" and "mansin *nicht lieben, hassen*" of the late eighteenth century, anonymous Herrnhuter vocabulary,[2] containing, as base, an(i)si, a word defined only as entering into "schöne Redensarten, z. B. jurán ansi *verlangen*, júra dánsi *ich verlange*, júra bánsi, etc.," but which C. H. de Goeje[3] (whose informant glossed this word by *vitality*) believed to be cognate with Island-Carib "ánichi *coeur, âme*. Ce mot mis avec le verbe dénote envie, volonté, désir, comme: chinhacaécoua clee bánichi *tu as bien envie de rire*."[4] The Island-Carib and Lokono words alike contain attributive KA- or privative MA-, common to both languages; and these prefixes, though they often change another

[1] See pp. 138, 283, 323, 330 of Raymond Breton's Dictionnaire caraïbe-français (éd. fac-simile Jules Platzmann, Leipzig 1892); pp. 14, 296 & 314 of his *Dictionnaire* français-caraïbe (éd. fac-simile Jules Platzmann, Leipzig 1900); and pp. 19, 38, 61–2 of his Grammaire caraïbe (nlle. éd. Lucien Adam & Ch. Leclerc. BLA III; Paris 1877).

[2] Arawakisch-Deutsches Wörterbuch; in BLA VIII (pp. 69–165); Paris 1882. The author is thought to have been either Schulz or Schumann.

[3] See p. 121 of this author's The Arawak Language of Guiana (Amsterdam 1928); and pp. 95 & 103 of his Nouvel examen des langues des Antilles; in JSAP n.s. 31 (pp. 1–120); Paris 1939. A cognate, Goajiro aï *life, heart, soul*, is also used to express love or wish.

[4] Breton's Dictionnaire caraïbe-français; s. v. "ánichi".

base-initial vowel to /a/ (so: IC ka- + íli *tail* > kali- *having a tail*, Lok. ma- + iribe *dirt* > maribe- *clean*), never change base-initial /a/ to another vowel. Besides which, both kanísiti núni (containing ánisi *heart, inclination, mind*) and khíseti núni (containing -isę *attraction*), both translatable by *he/it-is-liked by-me—I like him/it*, are attested for recent Dominican; kanísiti and khíseti also containing different alternants of the same attributive morpheme, ka- ~ kha- (/kh/ here represents a unit phoneme, aspirate k, in opposition to unaspirated /k/), which correspond to ga- and ha- respectively of the Central American dialect.

On the other hand, comparable with Breton's "ícheem," "lichiém-kia," "chétina," etc., with recent Dominican and Vicentian -isę (or -isen) and with Central American -ísię are the Cariban forms listed by Lucien Adam as follows:

> 187.—**Vouloir, aimer.** Ouay. *Icé, iche, ihé, hé*; Apar. *icé*; Bak. *isé, izé, ihé, hé*; Gal. *icé, ichié*; Acc. *ichey, chey*; Caribi *isey, sey*; Carij. *ecé.*[5]

In default of further evidence to the contrary, I can only conclude that Breton's "kinchin" and "minchin" had once—but probably no longer in his time—contained an alternant of his "ánichi" *heart*, etc., that the former words' base was contaminated by, and then blended with, a borrowed Karina (Galibi) form, -ise or se-, and that the latter itself was lost, or perhaps survived in one or two constructions such as those cited at the end of the second paragraph of this note.[6] And if this should be right, forms like recent Dominican kanísiti núni (see above) must be regarded as new constructions, analogous to that of ModEng. housewife after MEng. huswif had become hussy.

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[5] Matériaux. . .grammaire comparée de la famille caribe (BLA XVII; Paris 1893); p. 119.

[6] These forms may, of course, be unrelated either to Karina (i)se or to any of the other Island-Carib forms cited here. Cf. Lokono isa-*good*, isaikada *to please*.

AUTHORSHIP OF THE POWELL LINGUISTIC CLASSIFICATION[1]

WILLIAM C. STURTEVANT

It is well known that Major J. W. Powell's talents lay in the administration, promotion, and direction of research, rather than in research itself. The 'Powell classification' is the only lasting anthropological contribution directly associated with his name and it is evident that although his name, alone appears on the title page and he maintained (p. 142) that he himself was 'wholly responsible' for the classification, the work was in fact a cooperative undertaking. Powell made this clear in the text of his paper, and even more so in his descriptions of work in progress in his administrative reports in the front pages of the Annual Reports of the Bureau of American Ethnology for the years up to the date of the paper's publication (fiscal 1892—the volume is dated 1891, but actually appeared in 1892).

Powell emphasized again and again that the principal task he faced was the accumulation of data, rather than any problems of comparative method (which as far as I can discover are nowhere mentioned). In his day, knowledge of North American languages was very fragmentary: there were many unsolved problems of synonymy of language names and of language distributions, there were tremendous gaps in data on languages still spoken, the literature was widely scattered and poorly known, and there was a great lack of competent descriptions and even approximately accurately recorded word-lists. A few areas and families were fairly well understood and the principle that linguistic families must be determined on purely linguistic grounds was established, thanks to the work of such men as Albert Gallatin, Horatio Hale, and George Gibbs, whose publications Powell cited and whose results he generally accepted (after check-

[1] Published with the permission of the Secretary, Smithsonian Institution.

ing).[2] What was needed was the collection of sufficient data to allow the classification of all known North American languages. Powell constantly emphasized field work to collect vocabularies and work out distributions, and the linguistic classification he saw as part of his general plans for a tribal and linguistic map of North America, and for the preparation of a tribal synonymy (later incorporated in Bulletin 30, the Handbook of American Indians North of Mexico).

Boas (1917) long ago noted that Powell's comparative method consisted of the 'comparison of brief vocabularies...to bring out the most striking relationships.' Powell's conception of comparative method is illustrated in his early work on California languages (1877), where he merely grouped vocabularies in parallel columns under family headings, without further comments or analysis. The only comparative work by Powell which survives in the BAE manuscript archives consists of five manuscripts, each of which was titled 'Comparative Philology' by Powell and contains vocabularies of two or more Shoshonean languages similarly set out in parallel columns without further comment—there are not even indications of which forms Powell accepted as cognate and which he did not. Powell was concerned with only the most obvious relationships—hypotheses of more remote relationships he sometimes referred to (Adai and Caddoan; Atakapa and Chitimacha; Chimariko and Pomo; Achomawi-Atsugewi and Shasta; Salish and Wakashan; Haida and Tlinkit; and Piman, Nahuatl, Shoshonean, Tanoan, and Yuman) but rarely accepted—and this is the reason his work has lasted so well. For this sort of relationship, publication of the evidence was hardly necessary: any reader who questioned his results could usually locate vocabularies in the sources Powell cited or in Pilling's bibliographies which Powell sponsored, and once the vocabularies were juxtaposed any reasonable person would see at once that the languages grouped together are indeed related. Powell was quite careful to give credit for the collection of vocabularies and for work on synonymy and mapping, but he tended to pass over the actual comparisons without giving specific credit. Such statements as the following are typical: a vocabulary collected by Gatschet 'discloses the interesting fact that the Biloxi belong to the Siouan family' (8th Annual Report, p. xx); a vocabulary Henshaw collected in Marin county, California, 'as was expected, was subsequently found to be related to the Moquelumnan family,' while other vocabularies Henshaw obtained 'are sufficient to prove, beyond any reasonable doubt, that there are two linguistic families instead of one, as had been formerly supposed,' in the Santa Cruz-Monterey area (10th AR, pp. xiv–xv). Presumably Powell considered the assigning of credit in these cases unimportant: the difficult matter was to obtain the vocabularies; once these were in hand, simple juxtaposition was all that was required and this could have been done by almost anyone, and certainly was done in different instances by almost all the early staff of the Bureau.

The manuscript archives of the BAE contain no category of manuscripts by Powell or others said to be the drafts or working notes on which the classification was based. However the archives do contain scores if not hundreds of manuscript vocabularies dating from Powell's period, contributed by members of the Bureau staff and by outside correspondents. Many of them are in the 'schedules' which Powell compiled and published in 1877 and 1880, using the orthography recommended therein which Powell worked out with the advice of William Dwight Whitney. The principal linguistic field investigators on the Bureau staff before the publication of the classification were Albert S. Gatschet, Henry W. Henshaw, J. Owen Dorsey, and Jeremiah Curtin. Others on the Bureau staff who did some linguistic

[2] For the early history of North American Indian linguistics, see Goddard 1914:555–561, Powell 1891:12–25, and Wissler 1942:190–194.

field work and were involved in abstracting the literature and probably in routine comparison of vocabularies were J. N. B. Hewitt and James Mooney (both hired in 1885), Franz Boas (employed for three months in 1889 to 'prepare for convenient use a series of vocabularies of the several Salish divisions, previously collected by him in British Columbia'—10th AR, p. xxiii), and probably Garrick Mallery and W. J. Hoffman. James C. Pilling's work was apparently bibliographic only (1st AR:xvi; 7th AR:xxxiv–xxxvi; Powell 1891:142). Henshaw, in addition to considerable field work (especially in California), concentrated on synonymy and mapping (Powell 1891:142; 6th AR:xlv; 8th AR:xxviii; 9th AR:xxv–xxxvi, 10th AR:xviii; 11th AR:xxxi; 12th AR:xxxii; Henshaw 1920:56; Hodge and Merriam 1902:100, 100).

Powell himself undoubtedly did some of the routine comparison, as he indicates at various places in his administrative reports. Others who are specifically referred to as making comparisons accepted by Powell are Albert S. Gatschet (page references alone in the following refer to Powell 1891), for the isolated status of Beothuk (57–58; Mooney 1907:564), Chimakuan (62), Coos (89), Tunica (125), Tonkawa (125), Washo (131), Timucua (Mooney 1907:564), and probably Kiowa (6th AR:xxxv), and for the relationship of Klamath and Modoc (90), for Catawba as Siouan (112; Mooney 1907: 563), and probably the relationship between Cotoname and Comecrudo (8th AR:xxi); James Owen Dorsey, for the isolated status of Takelma (121), for Catawba as Siouan (112), for the relationship between Siuslaw, Yakona, and Lower Umpqua (134), and probably for the classification of various other Oregon languages (6th AR:xxxvi, xlviii); Henry W. Henshaw, for the isolated status of Esselen (10th AR:xv), and probably for comparative work in Shoshonean (5th AR:xxx) and the languages of the Santa Barbara region (6th AR:xxxi–xxxiii); J. N. B. Hewitt, for confirmation of Cherokee as an Iroquoian language (77; Swanton 1938:287); Jeremiah Curtin, for the separation of Costanoan and Miwok (70, 90); James Mooney, for Catawba as Siouan (12 AR:xxxv); and Franz Boas, for Wakashan (129). Further evidence for some of these contributions can readily be located in the BAE archives; a thorough search of the manuscripts would doubtless confirm others, and probably allow credit to be assigned for some of the many other areas where Powell was ambiguous or silent in his paper and his Director's reports (for example, I would look for evidence that Dorsey was responsible for much of the Siouan classification). Certainly Gatschet and Dorsey were the real 'philologists' on Powell's staff.[3]

References

Boas, Franz. 1917. Introduction. IJAL vol. 1, no. 1, pp. 1ff. (Reprinted in his *Race, language, and culture*, N.Y., 1948, pp. 199–210.)

Goddard, Pliny Earle. 1914. The present condition of our knowledge of North American languages. American Anthropologist, vol. 16, no. 4, pp. 555–601.

Henshaw, Henry Wetherbee. 1919–1920. Autobiographical notes. Condor, vol. 21, no. 3, pp. 102–107, no. 4, pp. 165–171, no. 5, pp. 177–181, no. 6, pp. 217–222; vol. 22, no. 1, pp. 3–10, no. 2, pp. 55–60, no. 3, pp. 95–101. Hollywood, Calif.

Hodge, F. W., ed. 1907–1910. Handbook of American Indians north of Mexico. 2 vols. Bureau of American Ethnology Bulletin 30.

Hodge, F. W., and C. Hart Merriam. 1931. Henry Wetherbee Henshaw. American Anthropologist, vol. 33, no. 1, pp. 98–105.

[3] After the above was written, Floyd G. Lounsbury called my attention to Kroeber's statement (1953:369) that the classification "was made for Powell, who was a geologist and an army major, by Henshaw the ornithologist when Powell found that he would never get his philologist-linguists like Gatschet, Hewitt, and Pilling to come through with the commitment of a classification." This assertion is not born out by the published and manuscript sources I have examined—and Goddard (1914:559), nearer to Powell's day, agreed that Gatschet and Dorsey were the prime contributors—yet Prof. Kroeber's recollection may still take precedence over the skimpy documentary evidence thus far located.

Kroeber, A. L. 1953. Concluding review. Chap. 20, pp. 357–376, in An appraisal of anthropology today, edited by Sol Tax and others. University of Chicago Press.

Mooney, James. 1907. Albert Samuel Gatschet—1832–1907. American Anthropologist, vol. 9, no. 3, pp. 561–570.

Powell, J. W. 1877. Appendix. Linguistics. Pp. 439–613 in Tribes of California, by Stephen Powers, Contributions to North American Ethnology vol. 3, U. S. Geographical and Geological Survey of the Rocky Mountain Region.

——. 1877. Introduction to the study of Indian languages, with words, phrases, and sentences to be collected. Washington. (2nd ed., 1880, with a separate 'Alphabet' of 2 leaves.)

——. 1881–1896. Report of the Director. Preliminary pages in First through Thirteenth Annual Reports of the Bureau of [American] Ethnology. Washington.

——. 1891 [1892]. Indian linguistic families of America north of Mexico. Bureau of [American] Ethnology 7th Annual Report, pp. 1–142.

Swanton, John R. 1938. John Napoleon Brinton Hewitt. American Anthropologist, vol. 40, no. 2, pp. 286–290.

Wissler, Clark. 1942. The American Indian and the American Philosophical Society. Proceedings of the American Philosophical Society, vol. 86, no. 1, pp. 189–204.

BUREAU OF AMERICAN ETHNOLOGY

ON DEFINING MORPHOLOGY AND SYNTAX

RICHARD S. PITTMAN

As late as 1951, I was one of those who held to a view that, for some languages, such as Tagalog, in which verb affixes mark syntax, and Vietnamese, a Chinese-type language which has no inflections, the morphology/syntax contrast was quite arbitrary or of very little relevance.[1] In view of the difficulties of finding an operational definition for the term 'word' which would be useful in any language, and in view of the fact that I believed the distinction between morphology and syntax hung ultimately on the definition of 'word', I was much inclined to ignore or avoid the terms. The convention of regarding morphology as a 'short' kind of syntax, and syntax as a 'long' kind of morphology also seemed to reduce their usefulness, in some languages, to terms which contrasted only in degree.

It is not good, however, to abandon old terms if they can possibly serve in the continuing developments of our science.

Recently there has occurred to me a way of stating the morphology/syntax contrast which I believe will stand up in any language, and which, for me, at least, permanently retrieves these valuable terms.

Following Saussure and Hjelmslev, I would like to focus attention, for the moment, on the contrast between two types of relations—list relations and sequence relations. List relations are cases of substitution, resulting in classes or paradigms; sequence relations are cases of 'on-the-line' addition, resulting in constitutes, phrases, clauses or sentences.[2]

A problem, however, in comparing these two types of relations in grammar, is to agree on a common starting point. The use of the term 'word' as a starting point may be satisfactory for some languages but it is not for others.[3]

[1] R. S. Pittman, A Grammar of Tetelcingo (Morelos) Nahuatl 6 (Baltimore, 1954).

[2] Cf. Ferdinand de Saussure, Cours de Linguistique Générale 115 (Paris, 5th ed, 1955); Louis Hjelmslev, Prolegomena to a theory of language 22 (Baltimore, 1953). I am indebted to Saussure and Hjelmslev for one of the basic premises of this paper, but come to opposite conclusions; both of them reject the morphology/syntax distinction (Saussure 185–187, Hjelmslev 16). Hjelmslev gives, as his reason for abandoning the morphology/syntax division, the fact that "there are, within the word, dependences completely analogous to those of the sentence and susceptible, *mutatis mutandis*, of the same kind of analysis and description." With this we agree, if 'word' must be the basis for the morphology/syntax distinction. If one is willing to accept 'word root' as the basis, however, and equate morphology with the description of Hjelmslev's 'system' and syntax with his 'process', the two terms may be retained as the noun equivalents of his adjectives 'paradigmatic' and 'syntagmatic'. I think the resulting elegance is worth it.

[3] It is very awkward, for instance, to identify

I should like to propose the use of the term 'word root' instead of 'word' as a starting point, and define that unit as 'any sequence of phonemes of a given language which belongs to a class of unlimited membership, and which is not analyzable into a combination containing a shorter sequence belonging to a class of unlimited membership.[4] This is in contrast with the classes composed of marginal morphemes, whose membership is strictly limited.

With that as starting point, it is possible to make a tight structural definition of the morphology of a language as 'the set of structural signals which relates its word roots (and/or their expansions) to one another in substitutions', and the syntax of a language as 'the set of structural signals which relates its word roots (and/or their expansions) to one another in sequences'. A morphological signal, then, would be any linguistic datum which marks either of two word roots in a sequence as having a dependence on the other. Thus, the English article *a* marks English word roots as being substitutable for each other in a sentence like 'It's a house,' while the Tagalog particle na marks Tagalog word roots as being tactically related to one another in a sequence like bulaklak na maganda *flower pretty*.

By structural signals we mean those linguistic data which depend, for their existence, on the grammatical system of the language in which they occur, and without which the system would suffer change, or collapse. Word roots, in contrast, may be freely replaced without modification of the grammatical system in which they occur.

Of course, if word roots are made the basis for the morphology/syntax dichotomy, the question immediately arises, 'What about affixes, and particles which are not word roots?' Many of these, as structural tests readily indicate, are portmanteau signals, indicating not only lexical contrasts, but also class or sequence relations, sometimes all three. Those which indicate sequence relations we have called 'construction markers'.[5] They are syntactic signals. Those which are both are structural portmanteaus. The reason for distinguishing them is that some mark substitution but not sequence relations, while some mark sequence but not substitution relations.[6] Thus, the English article *a* marks a noun class but gives no clue to the constructions in which nouns occur, while the Tagalog particle na marks constructions but gives no clue to the classes which enter into the constructions. The English possessive suffix -s marks both a class (nouns) and a sequence (noun-noun); it is therefore a structural portmanteau. All markers of dependent classes are structural portmanteaus.

It is to be noted that these definitions will work as well for Vietnamese as for Swahili, as well for Tagalog as for English. In Vietnamese, for example, the noun classifiers are, to all intents and purposes, full words. Their function in the morphology, however, that is, in marking other words as being substitutable for one another, is quite analogous to that of the noun-classifying prefixes of Swahili.[7] In Tagalog, on the other hand, the

the Tagalog suffix -in in the sentence Basahin mo ang libro *Let the book be read by you* as a part of morphology since its function is the syntactic one of relating *read*, *book*, and *you* together in a passive construction.

[4] I am indebted to Paul Garvin for the wording 'a class of unlimited membership' which replaces my original clause 'whose substitution possibilities are unlimited'.

[5] In R. S. Pittman, Class and Construction Markers. Paper read at 8th Pacific Science Congress, Manila, 1953. To be published in the Proceedings of the Congress.

[6] Sebeok has made a somewhat similar observation, "A Hungarian suffix may serve to relate the morpheme to which it is attached to the other morphemes in the sentence ('paradigmatic suffix'), or it may serve to relate the morpheme to which it is attached to other morphemes, not necessarily in the sentence, but semantically related ('derivational suffix')." T. A. Sebeok, Vowel Morphophonemics of Hungarian Suffixes SIL 2:3:47–50 (1944), pg. 47.

[7] In reply to Samuel Martin's question as to

verb affixes plus certain particles mark syntactic relations such as active and passive voice, and should therefore be considered to be syntax markers quite as effectively as the English *be* plus *past participle* plus *by* plus *inverted word order* signal.

It should be specifically pointed out here that our definition allows bound pronoun affixes to be substituted for full noun phrases and would identify the relation between, for example, a bound pronoun subject and the verb stem with which it occurs as being the 'same' relation as that between the verb stem and a noun (phrase) subject. Thus, the Spanish suffix *-mos* in *habla-mos* is substitutable for *el hombre* in the sentence *El hombre habla*, and the relation between *-mos* and *habla* is the same as between *el hombre* and *habla*. Both would be identified as syntactic relations. The addition of *nosotros* to the data would not change the description. It is simply an extension or repetition of *-mos*. Nor would the addition of adjective modifiers to *hombre* change the description; *-mos* or *nosotros...-mos*, substitutes for the whole phrase, not the head of the phrase.

It must be made explicit that, in recommending that the terms 'morphology' and 'syntax' be given structural value in place of their present pre-structural usage, I am not advocating a return to the procedure of describing 'all morphology before any syntax', nor would I advocate that all syntax be described before any morphology. It still seems important to me that morphology and syntax be alternated in any description at appropriate intervals.[8]

In conclusion, then, I am suggesting that by using word roots instead of words as starting point, and defining morphology as the vertical, or replacement, relation, and syntax as the horizontal, or one-after-the-other, relation, between word roots, a consistent value can be sustained for these terms in all languages. This does no great violence to the older definitions of the terms, invests them with a solid structural sense, and, we hope, might reconcile many European and American viewpoints, such as those surrounding definitions of the term 'word.'

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whether the numerals of Vietnamese are word roots, the answer that they are not is based on the fact that all except a very few of them are analyzable into smaller sequences.

[8] As was done in the Grammar of Tetelcingo (Morelos) Nahuatl.

NORTH AMERICAN INDIAN LANGUAGES: CLASSIFICATION AND MAPS. By George L. Trager and Felicia E. Harben. Buffalo: University of Buffalo Studies in Linguistics, Occasional Papers No. 5, 1958. 35 pp.

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I have been asked to comment on the maps in this work. The linguistic classification is being reviewed by Carl Voegelin in Language. Trager and Harben use as a base the map published by Murdock along with the first edition of his Ethnographic Bibliography in 1941 (not 1937). Although Murdock's map was adequate for 1941 and for the purpose for which it was compiled, it has shortcomings as a linguistic map in 1958. Murdock chose his territorial labels pragmatically on the basis of multiple criteria geared to the quantity of ethnographic data available at the time. Many of them are not linguistic units at all and he makes no claim that they are. Following Murdock's ethnographic map, Trager and Harben divide Eskimo speech from Alaska to Greenland and Labrador into nine languages, yet it is common knowledge that Rasmussen, who learned a Greenland dialect early in life, was able to communicate easily with informants in all nine of these territories on his field trip from east to west. Most linguists call such minor variations dialects, not languages. Then when Trager and Harben get to the Bering Sea where the first definite break in continuity of intelligibility occurs, they ignore it by lumping the two languages on each side of the break into a single

language labeled North and West Alaskan Eskimo.

Other examples where territorial units are not language units may be found in the Great Basin, where Panamint, Gosiute, Shoshoni, and Comanche are listed as separate languages. Published evidence indicates that these forms of speech were mutually intelligible all the way from from California to Idaho, Wyoming, and Texas. Therefore, they constitute a single language according to most linguistic taxonomists. In addition, the authors lump two languages which should have been kept separate, Panamint and Paviotso. Similarly, they lump the two or three Iroquois languages together as one. Other such errors may be found by any Americanist who wants to take the time to look for them.

The standard of drafting of the maps leaves much to be desired. The reviewer distinguishes four levels of cartography: 1) the easy to read and elegant work of the best hand drafters; 2) easy to read, with "canned" lettering printed on acetate and cut out and glued on the map; 3) amateurish but legible; 4) amateurish but not entirely legible. The maps of Trager and Harben fall in the fourth category. There is nothing to indicate latitude or longitude on any of the maps. This is understandable on land where "language" boundaries are numerous, but the oceans are also devoid of such guide lines, which are of value to the user who may wish to superimpose other data on the maps.

For the benefit of linguists not especially concerned with linguistico-ethno-history, it may be stated that everyone who has mapped Indian "languages" or "tribes" on a continental scale has used the linguistic or ethnographic present as a substitute for a changing time level. Like the historic present, where everything is written in the present tense, the linguistic and ethnographic present in the Americas telescopes the time differences of four centuries together on a single map. Some tribes and languages became extinct before others were discovered, and many peoples have migrated during this period. Thus the Shawnee are shown in one location by Driver et al. (1953) and Murdock (1941). Kroeber (1939) and the Voegelins (1944) show them in two localities. Their known history reveals that they were divided into five bands, some of which at some time after 1600 ranged from the Great Lakes in the north to the Gulf of Mexico in the south, and from the Atlantic coast on the east to about the 100th meridian (Texas) on the west (personal communication from Erminie Wheeler-Voegelin). All of the above maps, and others as well, are nothing more than handy summaries of a box car load of source material. The wanderings of the Shawnee in the historical period could be approached, if not matched, by many midwestern language-bearing groups. The astronomical enormity of the task of making sense out of all this historical detail is fully appreciated by those who have worked on Indian land claim litigation cases in the last decade. Trager is well aware of this limitation of all such maps and makes a very good statement about it in his review of the Voegelins' linguistic map. We regret that his own effort at mapping North American Indian languages does not come up to the standard of his review.

References Cited

Driver, Harold E., John M. Cooper, Paul Kirchhoff, Dorothy Rainier Libby, Wm. C. Massey, and Leslie Spier. Indian Tribes of North America. Indiana University Publications in Anthropology and Linguistics, Memoir 9, 1953.

Kroeber, A. L. Cultural and Natural Areas of Native North America. University of California Publications in American Archeology and Ethnology 38.1–242, 1939.

Murdock, G. P. Ethnographic Bibliography of North America. Yale Anthropological Studies 1.I–XVI, 1–168, 1941.

Trager, George L. [Review of] Map of North American Indian Languages by C. F. Voegelin and E. W. Voegelin. International Journal of American Linguistics 11.186–9, 1945.

Voegelin, C. F. and E. W. Map of North American Indian Languages. American Ethnological Society, Publication 20, 1944.

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NAVAHO-ENGLISH DICTIONARY. By Leon Wall and William Morgan. Phoenix, Arizona: Department of the Interior, Bureau of Indian Affairs, 1958. 65 pp.

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This thin quarto volume contains a list of some 2900 words and phrases, printed in three columns to the page on slick paper, bound in bright red and stamped in gold. Represented as a successor to Young and Morgan's The Navaho language (1943; out of print),[1] this volume turns out to be nothing of the sort. It contains a list of "useful phrases" in alphabetical order; it lacks the grammatical and paradigmatic data of the Young-Morgan dictionaries.

Superficially it seems easier to use, if less useful, than these dictionaries, witness this sample sequence of entries (p. 7, col. 3; glosses which have been added to those given in The Navaho language are italicized here, and new entries are preceded by an asterisk): 'alóós rice; *'álya it was made; *'ályaago when it was made, since it was made; *'ályaa yígíí the one that was made, built; *'alzhish he dances or is dancing; 'ał'ąą separate, *each*, *individual*, different, distinct, apart, *divide*, *varies*; 'ał'ąą 'ádaat'éii different kinds; *different colors*. Apparent from this sample is a concern for utility—in the addition of new glosses, the use of free translations, and the strictly alphabetical arrangement of entries. To find 'ályaa *it was made* in The Navaho language, one looks under the stem entry líí, léé, laa, 'į ('įįh), le' *to create*, *make*, and finds the form listed as a perfect passive (Part I, p. 129). To cope with 'ályaago, one goes to the list of enclitics (Grammatical Section, p. 17), and finds the translation *when* for -go as one possibility among others. A plain list saves time for a Navaho student in search of an appropriate English word or phrase.

The selection of entries for the Navajo-English dictionary was made, apparently, with different kinds of Navaho students in mind. Beside such elementary forms as bibid *his stomach*, nibid *your stomach*, are ranged forms encountered chiefly by bilingual Navahos in government service: 'átsą́ą' bita' góne' 'ats'oos naalgizh *intercostal neurectomy*, 'anáá' bik'i'niiséhígíí *pterygium*, *growth over cornea*, ts'in doo bik'é'ésti' gónaa k'é'élto' *extracapsular fracture*.

The utility of the Navajo-English dictionary for students of any kind is lessened by a disregard for frequency in listing items, and by the looseness of the English translations. Competing forms are given with no indication of relative frequency, e.g. dił bii' noot'įį' *septicemia*, dił yíchxǫ' *septicemia*. Enclitics of very high frequency are not listed (e.g. subordinative -go; substantival -ígíí, -ii, -í; interrogative -ísh, -shą'), though less frequent enclitics are listed (e.g. -di *at*, -gi *at*, -góó *to*, -łą́ą *surely*). Translations, moreover, sometimes are inconsistent or misleading. Some verbs are translated, for example, as infinitives, though Navaho has no infinitive form (e.g. 'adiniitł'íísh *to wet* [with the imperfective stem -tł'íísh; cf. the neuter diniitł'iizh *it is soaking wet*], bi'deelníh *to touch*). Verbs are also translated inconsistently as verb and as adjective: daalzhólí *they are soft*, *fluffy*, but yilzhólí *fluffy*; *soft* [= *it is fluffy* or *it is soft*]. Nouns are translated inconsistently as singular, plural or both, though the translators' options are limited in these cases by context rather than form; cf. 'anázis *eyelid*, 'atsiighąą' *brain*; 'ála' *hands*, 'átsą́ą' *ribs*; bits'in *his* (*their*) *bone*(*s*), bitsoo' *his* (*their*) *tongue*(*s*). The editors are not past using without explanation different glosses for the same nominal form: under *B* one finds biyęęzhii *its eggs; its testes*, but under *A sub verbo* 'ayęęzhii *egg*, *testicle*, one finds biyęęzhii *his testicle*. And the handling of color terms is misleading, e.g. dinooltł'izh *greenish* [but not also *bluish*, *purplish*; or better, *it is greenish*, *bluish* or

[1] Reviewed by Harry Hoijer, IJAL 11.120–3 (1945). Other major Navaho dictionaries are: Franciscan Fathers, A vocabulary of the Navaho language (1912; out of print); Berard Haile, A stem vocabulary of the Navaho language (Navaho-English 1950, English-Navaho 1951); Robert W. Young and William Morgan, A vocabulary of colloquial Navaho (1951).

purplish], dootł'izh *green, blue* [where it would be best to have *it is green, blue* or *purple*].[2]

The utility of the Navajo-English dictionary, then, is marred for students both by its awkward size and by its impeachable contents. For Navaho specialists its utility is even more questionable. If it is the latest it is also the palest of major Navaho dictionaries. Such dictionaries, one must add, when considered together form a relatively rich storehouse of material. Yet continuing desiderata include not only data on the relative frequency of forms and meanings [bąąh ha'łízhahí, the only form given by Wall and Morgan for *cup*, is much less frequent in colloquial Navaho than zhahí *cup*], and semantic refinements for forms now defined [łitso, glossed by Wall and Morgan as *it is yellow*, also means *it is orange*], but also the presentation of useful data that traditionally have been slighted, for example data relating to kinship terminology and usage.

To take but a few cases of misleading kinship treatment, Wall and Morgan do not distinguish clan siblings from biological siblings; clan siblings include 'ak'is *friend, sibling*, or *maternal cousin* (*all of the same sex*) and 'alah *sibling or maternal cousin* (*of the opposite sex*); biological siblings include 'ánaaí *elder brother*, 'ádí *sister* (*elder*), 'atsilí *the younger brother*, and 'adeezhí *she is the younger sister* [the Wall-Morgan glosses are typically inconsistent]. Furthermore, in current usage,[3] -na·í *elder brother* refers not only to ego's elder brother but also to ego's male parallel cousins (children of ego's father's brother or ego's mother's sister) who are older than but of the same generation as ego; -cilí *younger brother* refers not only to ego's younger brother but also to ego's male parallel cousins who are younger than but of the same generation as ego; -ádí *elder sister* refers not only to ego's elder sister but also to ego's female parallel cousins who are older than but of the same generation as ego; and -de·ží *younger sister* refers not only to ego's younger sister but also to ego's female parallel cousins who are younger than but of the same generation as ego. What about cross-cousins? Wall and Morgan list 'il na'aash *cousin* (*son of one's paternal aunt, or of one's maternal uncle*) and 'azeedí *cousin* (*daughter of one's paternal aunt, or of one's maternal uncle*). In current usage, however, -ilna?a·š *cross-cousin* refers to a male ego's father's sister's son or mother's brother's son; while -ze·dí *cross-cousin* refers to a male ego's father's sister's daughter or mother's brother's daughter, and also to all of a female ego's male and female cross-cousins. Until Navaho dictionaries manage to handle decently such elementary items as high-frequency kinship terms, there will be room for improvement.

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[2] There are only a few typographical errors: read béégashii for beegashii *cow, cattle*; tązhii for tázhii *turkey*, tsiits'in for tsiis'in *skull*.

[3] At least at Shiprock, N. M., where my chief informants were James D. Ahtcitty (in his twenties) and Elizabeth Ahtcitty (in her sixties). My remarks here as elsewhere in this review are based upon data recorded in Arizona and New Mexico in 1955 and 1956, in connection with the Southwest Project in Comparative Psycholinguistics.

RECENT PUBLICATIONS

General Linguistics

Bazell, C. E. Linguistic Typology. (An inaugural lecture, delivered on 26 Feb., 1958.) London: School of Oriental and African Studies, Univ. of London, 1958. 20 pp.

Buyssens, Eric. Les mutations consonantiques vues par Kurylowicz. Lingua 7.387–420, 1958.

DeLattre, Pierre. Les indices acoustiques de la parole: premier rapport. Phonetica 2.108–118, 226–251, 1958.

Fischer, John L. Social Influences in the Choice of a Linguistic Variant. Word 14.47–56, 1958.

Longacre, Robert E. Items in context: Their bearing on translation theory. Lg 34.482–491, 1958.

Malecot, André. The role of releases in the identification of released final stops: A series of tape-cutting experiments. Lg 34.370–380, 1958.

Siertsema, B. Problems of Phonemic Interpretation I. Nasalized Sounds in Yoruba. Lingua 7.356–386, 1958.

American Indian Languages

Canonge, Elliott. Comanche Texts. Norman, Okla: Summer Inst. of Linguistics. 1958. 156 pp.

Gudschinsky, Sarah C. Mazatec dialect history. Lg 34. 469–481, 1958.

Hasler, Juan A. La posición dialectológica del pipil como parte del Nahua del Este. America Indigena 18.333–340, 1958.

Kietzman, Dale. Tendências de ordem lexical da aculturação lingüistica em Terêna. Rev. de Antropologia [São Paulo] 6.15–21, 1958.

Mayers, Marvin. Pocomchí Texts, with Grammatical Notes. Norman, Okla.: Summer Institute of Linguistics, 1958. 149 pp. [Texts in a Maya language.]

Taylor, Douglas. More on the Consonantal System of Island Carib. World 14.71–83, 1958.

Miscellaneous

Araki, Kazvo, and others (ed.). Studies in English Grammar and Linguistics. A Miscellany in Honour of Takanobu Otsuka. Tokyo: Kenkyusha Ltd., 1958. 419 pp. [31 articles, written in English by Japanese scholars.]

Lister-Turner, Rev. R., and Clark, Rev. J. B. A Dictionary of the Motu Language of Papua. 2nd ed., ed. by Percy Chatterton, L.S.P. Sydney, Australia: A. H. Pettifer, Government Printer, n.d.

Lister-Turner, Rev. R., and Clark, Rev. J. B. A Grammar of the Motu Language of Papua. 2nd ed., ed. by Percy Chatterton, L. S. P. Sydney, Australia: A. H. Pettifer, Government Printer, n.d.

Rahder, Johannes. Etymological Vocabulary of Chinese, Japanese, Korean and Ainu, Part III (1959). Privately printed, New Haven, Conn.

Journals Received

America Indigena, v. 18, no. 4, 1958; v. 19, no. 1, 1959.

American Speech, v. 33, nos. 3, 4, 1958.

Anthropological Linguistics v. 1, nos. 1, 2, 3, 4, (1959).

Antropologia e Historia de Guatemala, v. 10, no. 1, 1958.

Language, v. 34, nos. 3 (Parts 1, 2), 4, 1958.

Leuvense Bijdragen, XLVII Jaargang, nos. 3–4, 1958. (s-Gravenhage: Martinus Nijhoff)

Lingua, v. 7, no. 4, 1958.

The Muslim World, v. 48, no. 4, 1958.

Oceania, v. 29, no. 1, 1958.

PMLA, v. 73, no. 5, parts 1, 2, 1958.

Word, v. 14, no. 1, 1958.